



Administrator Department of Environmental Quality **Enforcement Division** 1520 E. Sixth Avenue P. O. Box 200901 Helena, Montana 59620-0901

May 18, 2007

VIA HAND DELIVERED

Re: 2007 Cleaning and Demolition Project, Asarco East Helena Plant

Dear Gentleman:

On February 15, 2005, Asarco Incorporated (the entity to which Asarco LLC (Asarco) is the successor) and the Montana Department of Environmental Quality (Department) entered into a Consent Decree (Decree) to resolve alleged violations of the Montana Hazardous Waste Act and the Montana Administrative Code. The 2005 Decree expired on December 31, 2006.

Asarco and the Department are preparing a new 2007 Administrative Order on Consent (2007 Order), which will allow Asarco to continue with the cleanup processes established under the work plan provisions of the 2005 Decree. The 2007 Order will require Asarco to develop and implement a yearly work plan for calendar years 2007-2012 to remove, store, and properly dispose or recycle all remaining hazardous waste and/or secondary material located in the process units, pollution control devices, and storage units and other identified areas of the facility.

Attached is the 2007 Cleaning and Demolition Project that describes the management activities for calendar year 2007. The attached 2007 Cleaning and Demolition Project contains two sections, both of which are included within the attached three-ringed binder. The first section contains an introduction, project summary, management of removed material, interim measures program and reporting while the second section contains the URS 2007 Work Plan.

Asarco intends to begin the work outlined in the attached 2007 Cleaning and Demolition Project during the second quarter of 2007 or immediately following approval by the Department. Asarco is awaiting EPA review and approval of the Design Analysis Report for the CAMU Phase 2 Cell, which is directly linked to the Project's timetable. An accurate schedule for the Project cannot be prepared until the CAMU approval process is complete.

We look forward to working with the Department as we proceed with the project. If you should have any questions regarding this Project, please contact me at 227-4529.

Jon Nickel

Enclosure RCRA Project Manager

2007 CLEANING AND DEMOLITION PROJECT ASARCO EAST HELENA PLANT

INTRODUCTION, PROJECT SUMMARY, MANAGEMENT OF REMOVED MATERIAL, INTERIM MEASURE PROGRAM, AND REPORTING

Prepared by:

ASARCO LLC P.O. Box 1230 East Helena, MT 59635

AND

2007 WORK PLAN

Prepared by:

URS Corporation / Cleveland Wrecking Company 614 East Edna Place Covina, CA 91723

May 18, 2007

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2007 CLEANING AND DEMOLITION PROJECT ASARCO EAST HELENA PLANT

INTRODUCTION, PROJECT SUMMARY, MANAGEMENT OF REMOVED MATERIAL, INTERIM MEASURE PROGRAM, AND REPORTING

1.0 INTRODUCTION

Asarco Incorporated, now known as ASARCO LLC (Asarco), and the Montana Department of Environmental Quality (Department) entered into a 2005 Consent Decree (2005 Decree), on February 15, 2005, to resolve alleged violations of the Montana Hazardous Waste Act (MHWA) and Administrative Rules of Montana (ARM). The 2005 Decree required Asarco to develop and implement yearly Work Plans designed to remove, store, and properly dispose or recycle all remaining hazardous waste and recyclable materials from identified process units located within Asarco's East Helena Plant. The 2005 Decree expired on December 31, 2006. The department acknowledges that Asarco accomplished all of the activities contained in the 2005 Decree Work Plans, except for removing and properly disposing hazardous waste being stored in Subpart DD containment structures, cleaning the thawhouse building, and cleaning of certain portions of the acid plant contact section.

Asarco and the Department are preparing a new 2007 Administrative Order on Consent (2007 Order), which will allow Asarco to continue with the cleanup processes established under the Work Plan provisions of the 2005 Decree. The 2007 Order requires Asarco to develop and implement a yearly Work Plan for calendar years 2007-2012 to remove, store, and properly dispose or recycle all remaining hazardous waste and/or secondary material located in the process units, pollution control devices, and storage units and other identified areas of the facility. To the extent that Asarco disposes of hazardous waste and/or secondary material, it will do so either by removal to an approved CAMU at the facility or by removal to another facility according to proper regulatory procedures under MHWA or its regulations there under.

The May 2007 Comprehensive List of Process Units and Other Areas of Interest describes the past cleaning efforts already undertaken at the East Helena Plant. A copy of the May 2007 Comprehensive List of Process Units and Other Areas of Interest is attached as Appendix A. Asarco recognizes that this comprehensive list may need to be modified as a result of future investigations and/or inventories. This 2007 Cleaning and Demolition Project builds on Asarco's past efforts for removing and properly managing materials. This list does not necessarily constitute a complete inventory of areas of interest (AOIs) at the smelter complex, nor describe the current clean-up status at these areas. The Department shall maintain, on file, a complete inventory of AOIs and their current clean-up status.

The 2007 Cleaning and Demolition Project describes the management activities scheduled for this calendar year. Asarco has selected URS/Cleveland Wrecking Company (URS/CWC) to conduct the 2007 Cleaning and Demolition Work Plan, which is contained within this submittal. URS/CWC will be

responsible for construction of a Corrective Action Management Unit (CAMU) Phase 2 Cell, which is being conducted pursuant to the 1998 RCRA Consent Decree. For the purposes of this 2007 Cleaning and Demolition Project, the environmental cleaning, demolition, and handling procedures are primarily highlighted. URS/CWC will employ a systematic approach for cleaning, demolition, hauling, and disposition of the removed materials from identified process locations. The specific work practices associated with these activities are fully described within the accompanying URS/CWC Work Plan.

The ability to execute the 2007 Cleaning and Demolition activities is directly linked to the construction of the CAMU Phase 2 Cell. The CAMU Phase 2 Cell must be approved prior to beginning any cleaning and demolition work. Asarco has prepared and submitted to EPA the Design Analysis Report for construction of the CAMU Phase 2 Cell. Once approval of the Design Analysis Report has been obtained, Asarco will mobilize and begin construction. Under the best circumstances, the CAMU Phase 2 Cell will be available to accept material two months after construction begins. Based upon a June 1, 2007 Design Analysis Report approval date, material may be placed into the CAMU Phase 2 Cell around August 1, 2007.

To facilitate removal of material under this Work Plan, Asarco has prepared the following decision matrix table to determine the priority in managing removed material from the East Helena Plant.

DECISION MATRIX FOR MAJOR PROCESS LOCATIONS

	Criteria For Prioritizing Management of Recyclable material						
Process Location	Level of Contamination	Volume of Recyclable material	Degree of Exposure	Condition of Structures			
Non-Production	Low	Low	Low	Good			
Tanks	Low	Low	Moderate	Good			
Ore Storage	Low	Low	Low	Good			
Ore Receiving	Moderate	Moderate	Low	Good			
Sinter Plant	Moderate	High	Low	Fair			
Acid Plant	Moderate	Moderate	Low	Good			
Blast Furnace	Moderate	Moderate	High	Fair			
Dross Plant	High	High	Moderate	Good			
Former Zinc Plant	High	Moderate	High	Poor			
Water Treatment	Low	Moderate	Low	Good			

The removed material from the process locations that are shaded in the preceding matrix table were removed under the 2005 Decree, with the exception of the contact section of the acid plant. Based upon the process locations that were not completed under the 2005 Decree, Asarco proposes to focus the 2007 Cleaning and Demolition Project activities within those area identified in 2007 Cleaning and Demolition Work Plan, as further described in the accompanying URS/CWC Work Plan.

Asarco has prioritized the structures identified as Phase IV (Stage 1 and Stage 2), Alternate A, and Alternate B for cleaning and demolition during calendar year 2007. These areas are further illustrated within the attached URS/CWC 2007 Cleaning and Demolition Work Plan, Appendix A Phase IV sheet number 8.

2.1 Phase IV, Stage 1 Work Areas

The Phase IV, Stage 1 work areas contain structures that must be cleaned and demolished in order to facilitate construction of a slurry wall in the former Speiss-Dross Plant Area. The thawhouse has been included in the Phase IV, Stage 1 cleaning and demolition work area, as further described in the following table.

Phase IV, Stage 1

- o Contractor's Lunchroom
- o Highline Railroad
- o Garage
- o Baghouse & 200' Stack
- o Blast Furnace Bldg. Remainder
- o Contractor's Change Room
- Main Office
- o Main Natural Gas Valve House
- Charge Building
- o Thawhouse

These areas are further illustrated within the attached URS/CWC 2007 Cleaning and Demolition Work Plan, Appendix A Phase IV sheet numbers 9 and the top of 12. Asarco has identified the subsurface soils underlying the former Speiss-Dross Area as a potential source of arsenic in down-gradient groundwater. Under the 1998 RCRA Consent Decree, Asarco submitted an April 30, 2007 Design Plan that set forth a permanent, passive source control remedy for construction of a slurry wall in the former Speiss-Dross Plant Area and installation of a temporary cover over the slurry wall area. The construction of slurry wall in the former Speiss-Dross Plant Area is scheduled to begin in the fall of 2007. Asarco anticipates hauling the material (less recoverable metal assets) generated from the Phase IV, Stage 1 cleaning and demolition area to the concentrate storage and handling building for temporary storage or directly to the CAMU Phase 2 Cell.

2.2 Phase IV, Stage 2 Work Areas

The Phase IV, Stage 2 work areas contain structures primarily associated with the blast furnace gas cleaning operation and acid plant contact section, as further described in the following table.

Phase IV, Stage 2

- o Blast Furnace Flue
- Acid Plant Cooling Towers
- o 400' D&L Stack
- o Acid Plant
- Blast Furnace Baghouse
- o Ore Unloading Bins
- o Crushing Mill
- Pump Tank Building
- o Acid Plant Shop

- Truck Loading & Spray Dryer Building
- Sand Filters
- o 200' Acid Stack
- o Monier Flue
- o 425' Blast Furnace Stack
- Sample Mill
- o Auto Shop
- Main Blower Building
- Ringling Dust Building

These areas are further illustrated within the attached URS/CWC 2007 Cleaning and Demolition Work Plan, Appendix A Phase IV sheet numbers 10, 11, 12, and 13. Asarco originally anticipated including the cleaning and demolition of the blast furnace flue and Monier flue within the 2007 Cleaning and Demolition Project Work Plan. However, on March 29, 2007, EPA requested that Asarco prepare a separate interim measures (IM) work plan for these two areas. A copy of the EPA March 29, 2007 letter is attached as Appendix B. EPA is requiring Asarco to submit the IM work plan no later than June 4, 2007 that includes: 1) removal of structures and flue dust, 2) collection of pre-demolition samples, 3) characterization of soils, 4) proposal of soil criteria for contaminant excavation depth and confirmatory sampling, 5) spill prevention and containment measures for the demolition of the flue, 6) and any special handling or waste management procedures required for the flue dust. Although the 2007 Cleaning and Demolition Work Plan references the cleaning and demolition of the blast furnace flue and Monier flue, the IM work Plan will govern all future actions within these two areas. Asarco anticipates hauling the material (less recoverable metal assets) generated from the Phase IV, Stage 2 cleaning and demolition area to the concentrate storage and handling building for temporary storage or directly to the CAMU Phase 2 Cell.

2.3 Phase IV, Alternate A and Alternate B

The Alternate A and Alternate B work areas contain structures that are not directly associated with process or production areas, as further described in the following table. The areas described in Alternate A and Alternate B comprise primarily storage facilities and maintenance buildings that would not have contained process materials.

Phase IV, Alternate A and Alternate B

- o Highline Railroad Remainder
- o Blast Furnace Office
- o Power House
- Blast Furnace Heat Exchanger
- Machine Shop
- o Direct Smelt Building
- Breaking Floor
- Masons Shop
- o Motor & Paint Shop
- Paint Storage Building
- Meeting Room

- Locomotive Crane Shed
- Blast Furnace Lunchroom
- o Pump House
- o Blacksmith Shop
- Carpenter Shop
- o Abandoned Breaking Floor
- o Sinter Stockpile Building
- High Lead Welding Shop
- o Oil HS
- Refractory Storage
- o Zinc Plant O₂ Building

These areas are further illustrated within the attached URS/CWC 2007 Cleaning and Demolition Work Plan, Appendix A Phase IV sheet numbers 13 and 14. Asarco had projected the cleaning and demolition of the locations set forth in Alternate A and B within the 2007 Cleaning and Demolition Project. However, delays in beginning construction of the CAMU Phase 2 cell are expected to suspend some or all portions of the Alternate A and B cleaning and demolition. Consequently, Alternate A and Alternate B areas will be completed by URS/CWC only after authorization of Asarco. Asarco will advise the Department of our ability to address the cleaning and demolition of Alternate A and B locations through quarterly progress report.

3.0 MANAGEMENT OF REMOVED MATERIALS

The material removed under the 2006 Work Plan (prescribed within the 2005 Decree) is currently being stored inside Subpart DD containment structures. Asarco has prioritized the removal and placement of these stored materials within the CAMU Phase 2 Cell. The waste material currently being stored inside the concentrate storage and handling building, Coverall building, and direct smelt building will be the first material that will be placed into the CAMU Phase 2 Cell. The materials removed under the 2007 Cleaning and Demolition Project will be managed as described in the following sections.

3.1 Disposition of Removed Material (June – August)

The material removed between June 1, 2007 (anticipated cleaning and demolition project start date) and August 1, 2007 (anticipated date for CAMU Phase 2 Cell to accept material) will be transport and temporarily stored in the concentrate storage and handling building until CAMU construction permits direct placement.

3.2 Disposition of Removed Material (August - October)

The material removed between August 1, 2007 (anticipated date for CAMU Phase 2 Cell to accept material) and October 15, 2007 (anticipated temporary closure of date of CAMU Phase 2 Cell) will be transport directly to the CAMU Phase 2 Cell.

3.3 Disposition of Removed Material (October - December)

Material removed after October 15, 2007 will be placed inside Subpart DD containment structures, such as the concentrate storage and handling building. The concentrate storage and handling building has sufficient capacity to store all of the materials that are expected to be generated from October 15, 2007 through the completion of the 2007 Cleaning and Demolition Project. The material placed inside the concentrate storage and handling building after October 15, 2007 will be stored in bulk within the building until final disposition. The quantity of material stored at any given time will be dependent upon accumulated volumes.

3.4 Management of Stored Material

The material that is generated as part of the 2007 Cleaning and Demolition Project and temporarily stored inside Subpart DD containment structures will be transported to the CAMU Phase 2 Cell when it re-opens in the spring of 2008.

4.0 INTERIM MEASURE PROGRAM

On May 5, 1998, ASARCO and the United States Environmental Protection Agency (EPA) entered into a Consent Decree (RCRA Consent Decree, U.S. District Court, 1998) to initiate the corrective action process in accordance with the Resource Conservation and Recovery Act (RCRA) and the Clean Water Act (CWA). During April 25-26, 2006, Asarco, EPA, and the Department met at EPA offices in Denver in a working session to evaluate existing site conditions and outline a strategy for groundwater C:\TEMP\Solid And Hazardous Waste - 2007 Asarco Work Plan (5-18).Doc\HLN\S/17/07\065

remedial measures at the site. The Department's participation addressed the need to coordinate plant facility cleanup activities associated with a 2005 Decree with the RCRA Consent Decree activities. A major area of over lap between the two programs involved the final cleaning, soils sampling, backfilling, and interim capping of areas in which cleaning and demolition had occurred and where exposed soils were present. Asarco intends to address this over lap by:

- Identifying and collecting surface samples where soils have been exposed during cleaning and demolition activities.
- Outlining the areas in which backfilling using fumed slag will be required to achieve proper site stabilization and drainage,
- Presenting the locations that will require interim and capping,
- o Providing the interim capping techniques, procedures, and materials that will be used to inhibit infiltration of precipitation within the demolition areas, and
- Outlining the general, short-term maintenance for the interim cap.

The 2007 Cleaning and Demolition Project involves removing all structural components to existing building grade. The remaining features, including existing foundations and concrete slabs that are not removed, will be incorporated under an interim cap.

The areas subjected to 2007 Cleaning and Demolition Project will undergo final cleaning (see Section 4.1). Where cleaning and demolition has exposed soils within the demolition footprints, samples will be collected to document arsenic and metal concentrations (see Section 4.2). Select areas within the demolition areas will be backfilled with fumed slag to achieve proper drainage (Section 4.3). The locations requiring interim capping will be identified (section 4.4) and the techniques, procedures, and material used for installing will be outlined (section 4.5). The general, short-term maintenance of the interim cap will be necessary to ensure integrity (section 4.6).

4.1 Final Cleaning Action

The final cleaning of the 2007 Cleaning and Demolition Project will involve a three-phased approach. First, the exposed concrete footprint will undergo a rough cleaning using conventional scraping and shoveling methods. Although this cleaning technique provides an efficient method for removing residual materials, it cannot achieve the prescribed level of cleanliness. To supplement conventional cleaning methods, the concrete footprint will be mechanically swept. The use of the mechanical sweeper will remove surface materials that may not be completely removed using conventional cleaning techniques. Finally, the concrete footprint will be cleaned using a high-velocity vacuum. This final cleaning method will remove any fine material, particularly along the interfaces between the concrete floor and building columns, fan foundations, and support walls.

4.2 Identification and Collection of Soil Samples

Once the cleaning stage has been completed, the 2007 Cleaning and Demolition areas will be surveyed. The survey will catalog any area within the footprint that contains exposed soils. All exposed soil areas will be mapped and recorded on plan views.

The areas with exposed soils within the 2007 Cleaning and Demolition footprint will be identified once the cleaning and demolition in these areas is complete. The proposed soil-sampling program for exposed soil areas within the footprints of the 2007 Cleaning and Demolition Work Plan is summarized in Table 4-1.

Surface soil samples (0-4 inches) will be collected from exposed soil areas using the same techniques and procedures used for Interim Measures (IM) and RCRA Facility Investigation (RFI) activities, as described in the IM and RFI Work Plans (Hydrometrics 1999 and Hydrometrics 2000). A total of five surface soil samples will be collected from each identified exposed area and composited into one representative sample of the area. Samples will be collected using hand tools (hand shovel, trowels, or hand augers). The samples will be described by an experience geoscientist or engineer and photographed. The samples will be stored in ziplock baggies and archived for future analysis. The soil samples will be analyzed in accordance with prescribed holding times. The locations of each soil sampling site will be cataloged using samples numbers and GPS coordinates. The sampling Standard Operating Procedures (SOPs), and analytical parameters and methods are summarized in Table 4-1. For convenience, a listing of relevant SOPs from the IM and RFI work plans are attached in Appendix C.

4.3 Backfill Locations and Fumed Slag Composition

Once the exposed soil survey and soil sampling program is complete, the 2007 Cleaning and Demolition areas will be graded and, as necessary, backfilled to achieve proper drainage. Asarco will use on-site fumed slag as backfill. The fumed slag will be placed in areas that are below grade or require drainage assistance. The fumed slag will serve as the subgrade for the interim and pending final cap, over which an engineered cap comprised of non-woven geotextile and RPE will be placed. The fumed slag has been used as a grading material at the plant site in the past and possesses good physical characteristics for fill or sub-foundation uses (granular material and compacts wells). Although fumed slag contains elevated total metal concentrations, the metals are bound in a silicateiron matrix with characteristics of low metal leachability. The potential for metal migration from the fumed slag is low. In response to EPA's July 6, 2006 comments, Asarco provided the rationale for using fumed slag for backfilling purposes, including study results derived from the RCRA Consent Decree investigations. The slag-related investigative results contained in the Current Condition Release Assessment (CC/RA, January 1999) and qualitative analyses of fumed slag (May 2001) are attached in Appendix D. In April 2005, Department representatives collected fumed slag samples from the East Helena Plant to assess the potential environmental impacts from its use as an iron substitute within the cement manufacturing industry. A copy of the Department's April 2005 fumed slag sampling event results is attached in Appendix D. A July 2006 Department Environmental Impact Statement (EIS) may contain additional slag related information.

Most, but not all of the footings or similar structures encountered during the implementation of the Project will be brought to grade. Most of the concrete, asphalt slabs, and some interior wall and/or footings will remain in place. All depressed areas will be covered with an interim cap. The presence of above ground concrete, asphalt, walls, or footings will not compromise nor impair the ability to achieve proper drainage. The activities under the Project will probably not affect current zoning. Industrial or commercial activities would not be precluded. Certain deed restrictions may be incorporated should residential use of the land be considered.

TABLE 4-1. EXPOSED AREA SOIL SAMPLE COLLECTION AND ANALYSIS MATRIX

Commis	Burnoso	Sample Types and	Number	Total	Sampling	Amaludical	Project Laboratory Detection		Field C)C	
Sample Location	Purpose	Sample Types and Depth Intervals	of Sampling Events	Non-QC Samples	Standard Operating Procedures	Analytical Parameters	Methods	Limit Goal	Field Duplicates	Field Splits	Total Samples
2007 Cleaning	and Demolition Program										
Location to be	Document metal	Grab samples 0-4 inch	1	3	HF-SOP-2	As	XRF	10 ppm	1	None	4
Determined after	concentrations of exposed soils within the 2007	increment, 5 spot sample locations			HF-SOP-4	Cd	XRF	10 ppm		}	
demolition is	Cleaning and Demolition	exposed site.			HF-SOP-5	Cu	XRF	10 ppm			
complete.	footprint.	Composite to form representative sample			HF-SOP-7	Pb	XRF	10 ppm		l	
		of site			HF-SOP-29 HF-SOP-31 HF-SOP-58 HS-SOP-6 HS-SOP-13 HS-SOP-57	Zn	XRF	10 ppm			
						As Cd Cu Pb Zn	SPLP (EPA 1312) SPLP (EPA 1312) SPLP (EPA 1312) SPLP (EPA 1312) SPLP (EPA 1312)	0.1 mg/L 0.1 mg/L 0.1 mg/L 0.1 mg/L 0.1 mg/L			

4.4 Location of Interim Caps

Once the required backfilling has occurred, the demolition areas will be covered to control drainage, and to control the potential for infiltration of precipitation and run-on with in the newly exposed footprints. The described capping is considered a precautionary, interim measure. The capping techniques, procedures, and materials are designed to control drainage, potential infiltration, and run-on until a final remedy is selected. Although the capping program is interim, it is possible that many of the features such as placement of the fill material and interim caps will remain in place even after a final remedy is implanted. The drainage plans for these areas are further illustrated within the attached URS/CWC 2007 Cleaning and Demolition Work Plan, Appendix A Phase IV sheet numbers 17 - 21.

4.5 Interim Cap Techniques, Procedures and Materials

The interim caps will be constructed to cover newly exposed footprints in the demolition areas. The interim cap details and specifications are further illustrated within the attached URS/CWC 2007 Cleaning and Demolition Work Plan, Appendix A Phase IV sheet number 22. In general, from the top down, the interim cap will consist of the following:

- Sand bags to hold down the interim cover during windy periods,
- A 24-mil reinforced polyethylene (RPE) with the PRE seams overlapped 3 inches and sealed with a butyl rubber seaming tape,
- o A minimum 10 ounce non-woven geotextile,
- o A prepared sub-grade consisting of fumed slag fill for grading purposes, and
- o Existing soils, concrete slabs and/or concrete foundations.

4.6 Maintenance of Interim Cap

4.6.1 Site Inspection

Periodic inspections of the interim cap will be conducted to ensure that the interim cap systems are performing adequately and to identify problems and provide proper maintenance of interim cap systems. The inspection program will involve three types of inspections: (1) informal inspections, (2) periodic technical inspections, and (3) special inspections after extreme events.

The informal inspection is actually a continuing effort by on-site personnel, performed in the course of their normal duties. Periodic technical inspections and inspections after extreme events will be performed by onsite Asarco staff (or other technical representatives) familiar with the design and construction of the cover systems. The periodic technical inspection will be performed monthly to document the condition of the cap components. Special inspections are very similar to periodic technical inspections but are performed only after an extreme event such as a rare rainstorm, tornado, or earthquake.

The inspection of the cover systems will typically involve walking the entire site in a systematic fashion that ensures a comprehensive review. If any problem or deficiency is found, the inspector should record the location on a field sketch. A complete description of the affected area, including all pertinent data (i.e., size of the area and other descriptive remarks such as exposed synthetic materials) should be recorded on the appropriate reporting forms. An accurate and detailed description of observed conditions will enable a meaningful comparison of conditions observed at different times.

Photographs may be helpful in documenting problems. Provisions should be made to keep a photographic log of problems, repairs, and general site conditions. This log will provide valuable information when evaluating the performance of the cover system and when planning repair strategies.

It is important to have a record of site conditions at various stages after capping. Good documentation will provide valuable information to help maintenance and repair planning. Inspection checklists to assist in the inspection and documentation procedures should be developed and modified as needed throughout the interim capping period. The checklist will (at a minimum) contain items to evaluate such as membrane condition, sand bag condition, liner seams, liner/concrete attachments and site drainage. A copy of an example inspection form is attached in Appendix E.

4.6.2 Site Security

The interim cap will be contained within the fenced Asarco facility and will be kept secured so that people or animals do not disturb the cap. Site access by ongoing plant or demolition operations will be limited through the use of barricades, barrier tape, or temporary fencing. Plant personnel will advise contractors conducting site activities of access limits within or near capped areas.

4.6.3 Site Maintenance

As shown in Table 4-2, there are four different types of maintenance tasks listed by priority rather than by frequency. Table 4-2 is provided as a guide to prioritize the different types of maintenance activities in proper perspective. The different types of maintenance are also discussed in the following subsections.

TABLE 4-2. PRIORITY OF MAINTENANCE TASKS

Priority	Type of Maintenance	Description and Example
1	Emergency	A situation requiring immediate attention (for example, fire or flood).
2	Preventative	Scheduled inspection and minor repairs carried out during inspection (for example, cleaning of membrane liner).
3	Corrective	Corrective maintenance required as a direct result of scheduled inspection (for example, repair of torn membrane liner).
4	Housekeeping	Routine housekeeping of buildings and grounds (for example, disposal of debris and general housekeeping).

 Emergency maintenance - Emergencies are situations arising unexpectedly that require urgent attention. Often, immediate response must be provided to avert potential serious damage. Provisions for emergency repair/damage control activities must therefore be in-place prior to the occurrence. Toward this end, an Emergency Contacts list will be prepared and kept current, and

- include local emergency response organizations, assigned maintenance personnel, and agency and owner representatives. Table 4-3 provides a partial list of emergency contacts.
- 2. Preventative maintenance Preventative maintenance will be performed to extend the life of equipment and structures. With the exception of routine surveillance and inspections, preventative maintenance tasks should be scheduled in accordance with the recommendations of the material and equipment manufacturers. Scheduled inspection and maintenance of all site facilities will help ensure that potential problems are discovered and corrected before they become serious, as well as providing for the performance of periodically required upkeep. During routine inspections, the Asarco personnel should be alert for any abnormal conditions, which could indicate potential problems.
- Corrective maintenance Corrective maintenance consists of repair and other non-routine
 maintenance. Asarco personnel must always be ready to handle these tasks as the need arises.
 Corrective maintenance procedures should follow the equipment or material manufacturer's
 recommendations. In planning for the corrective maintenance, arrange for the assistance of an
 engineer or manufacturer's representative, if necessary.
- 4. <u>Housekeeping</u> Maintaining well-kept facilities indicates pride on the part of the Asarco personnel, and provides for good and efficient operations. Well-kept property cultivates good neighbor relations with adjacent property owners. Housekeeping tasks may include collecting/disposing of litter or debris and maintaining access barriers.

TABLE 4-3. EMERGENCY NOTIFICATION CONTACTS AND PHONE NUMBERS

General Emergency Numbers	
Fire Department	911
Ambulance	911
Police	911
Corporate Resources	
ASARCO LLC	
Blaine Cox (East Helena Smelter)	(406) 227-4098
Jon Nickel (East Helena Smelter)	(406) 227-4529
Other Resources	
U.S. EPA (24-hour emergency)	(206) 553-1263
Superfund/RCRA Hotline	(800) 424-9346
Hydrometrics, Inc.	(406) 443-4150

4.7 Departmental Inspections and Confirmation

Asarco will notify the Department within five (5) working days after removal of the material and demolition a specific process unit or areas has been completed. The purpose of this notification is to request that the Department, through its oversight authority, inspect and confirm that the cleaning activity has been performed in accordance with the Work Plan.

These notifications and inspections will allow the Department to document that Asarco has fulfilled all the conditions of the 2007 Order, of which the 2007 Cleaning and Demolition Work Plan is a part. The Comprehensive List of Process Units and Other Areas of Interest will be regularly updated after the Department inspects the process units or locations.

5.0 REPORTING

5.1 Quarterly Reporting

Asarco intends to begin the work outlined in this Work Plan during the second quarter 2007 or soon thereafter following approval by the Department. Within 30 days after each calendar quarter (no later than July 31, 2007, October 31, 2007, and, if necessary, January 31, 2008), Asarco will submit quarterly reports that contain the following information:

- a. A description of the portion of the Work Plan completed;
- b. Summaries of all deviations from the approved Work Plan during the reporting period;
- c. Summaries of all problems or potential problems encountered during the reporting period;
- d. Projected work for the next reporting period; and
- e. Documentation of all shipments of recyclable material and hazardous waste off-site including shipping papers such as manifests (if required); and
- f. Description of each shipment of reclaimed or recycled material made during the preceding quarter indicating how the material is managed, handled, or treated for recovery or recycling that demonstrates that it has value. The information to be submitted to the Department in making a successful stewardship demonstration is: (1) acceptance criteria required by the receiving facility (expressed as a minimum threshold of recoverable metals and maximum allowable toxic metals), (2) a demonstration that the receiving facility is in compliance with all applicable environmental requirements, (3) a copy of the contractual agreement between Asarco, its broker and the receiving facility, (4) the name of the state or provincial regulatory contact and facility contact.

Quarterly reports for 2007 will not be required after submittal of the 2007 Work Plan Completion Report.

5.2 Annual Reporting

Within thirty (30) days, but, no later than January 31, 2008, after Asarco concludes that it has fully implemented the materials removal outlined in the 2007 Cleaning and Demolition Work Plan, Asarco

shall submit a 2007 Work Plan Completion Report to the Department. The contents of the Work Plan Completion Report will include:

- a. A description of the cleaning efforts conducted,
- b. If applicable, documentation of all shipments of recyclable materials and/or hazardous wastes,
- c. Summaries of all problems or potential problems encountered during the reporting period, and
- d. Certification that the Work Plan has been fully implemented.

6.0 REFERENCES

Hydrometrics, Inc., 2000. RCRA Facility Investigation Work Plan, East Helena Facility, March 2000.

Hydrometrics, Inc., 1999. Interim Measures Work Plan, East Helena Facility, April 1999, Revised July 1999. Includes Volume II, Corrective Action Management Unit Design Report.

2007 CLEANING AND DEMOLITION PROJECT ASARCO EAST HELENA PLANT

2007 WORK PLAN

APPENDIX A

May 2007

COMPREHENSIVE LIST OF PROCESS UNITS AND OTHER AREAS OF INTEREST (AOIs) (MAY 2007)

Asarco East Helena Plant Comprehensive List of Process Units and Other Areas of Interest (AOI) Updated May 2007

Location	Operational	Has Cleanup	Date of Cleanup	State Inspection/
	Status	Been Completed	and/or Demolition	Confirmation
NON-PRODUCTION				
AREAS				
Paint Shop	Not In Use	Not Required	Not Required	10/29/2003
Paint Storage Area	Storage	Not Required	Not Required	2/23/2004
Methanol Storage	Storage	Not Required	Not Required	10/29/2003
Motor Storage Shop	Storage	Not Required	Not Required	10/29/2003
High Lead Welding	Not In Use	Not Required	Not Required	10/29/2003
Sweeper Garage	Storage	Not Required	Not Required	10/29/2003
Laboratory	Storage	Yes	7/13/2004	2/23/2004
	Demolished I	November 2006		11/15/2006
Laboratory Storage	Storage	Not Required	Not Required	2/23/2004
	Demolished I	Demolished November 2006		11/15/2006
Sanitary Sewer Plant	Not In Use	Not Required	Not Required	10/29/2003
Acid Plant Shop	Storage	Not Required	Not Required	4/7/2004
Carpenter Shop	Not In Use	Not Required	Not Required	10/29/2003
Main Shop	In Use	Not Required	Not Required	10/29/2003
to Shop	In Use	Not Required	Not Required	10/29/2003
warehouse	Storage	Not Required	Not Required	4/7/2004
Warehouse Pad	Storage	Not Required	Not Required	4/7/2004
Warehouse Chemical Accum.	Storage	Yes	7/13/2004	4/7/2004
Powerhouse	In Use	Not Required	Not Required	4/7/2004
Blacksmith Shop	Not In Use	Not Required	Not Required	10/29/2003
Brick Shed	Not In Use	Not Required	Not Required	10/29/2003
Used Oil Storage	In Use	Not Required	Not Required	10/29/2003
Hazardous Waste	In Use	Not Required	Not Required	10/29/2003
Accumulation at 97 Bins	ļ			
97 Bins	In Use	Not Required	Not Required	10/29/2003
Guzzler Vacuum System	In Use	Not Required	Not Required	4/7/2004

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
NKS	Ctatus	Teen completed	Tandor Bernollion	Communición
Speiss Tank		Yes	7/22/2003	8/28/2003
·			8/8/2005	ļ
	Demolished		Fall 2006	11/15/2006
Stormwater Tank	In Use	Yes	7/21/2003	4/7/2004
			and 8/16/2004	
Thornock Tank	In Use	Yes	7/22/2003	8/28/2003
Million Gallon Tanks	In Use	Yes	7/23/2003	4/7/2004
İ			and 8/15/2004	
			9/1/2005 (west)	
Clarified Water Tanks	In Use	Yes	Summer 2002	4/7/2004
Equalization Tank	In Use	Yes	Summer 2002	4/7/2004
Truck Scale Storm Sump	In Use	Yes	7/25/2003	4/7/2004
			and 8/19/2004	
			8/8/2005	
Truck Gate Storm Sump	In Use	Yes	7/21/2003	4/7/2004
Thawhouse Storm Sump	In Use	Yes	7/21/2003	4/7/2004
		<u> </u>	8/8/2005	
Baghouse Storm Sump	In Use	Yes	7/25/2003	
			and 8/19/2004	
Pan Storm Sump	In Use	Yes	7/22/2003	4/7/2004
			and 8/20/2004	
	Under Cap		Fall 2006	11/15/2006

Footnote: The schedule for cleaning all stormwater tanks and sumps is governed by the amount of sediment accumulation over a given period of time.

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation		
ORE STORAGE AREAS						
Thawhouse Building	Not In Use	No		10/29/2003		
Coverall Buildings	Leased By	Yes	Vacuum/Wash-	10/29/2003		
- Barnum Building	American		down in 2002			
	Chemet		Prior to Lease			
- Bailey Building	In Use	No	Pending	10/29/2003		
	Additional cle	eaning following re	moval of waste mat	terial to CAMU		
Ringling Building	In Use	Yes	Summer 2002	10/29/2003		
Ore Storage Yard	In Use	Not Required	Not Required	4/7/2004		
High Grade Building	Not In Use	Yes	Summer 2002	10/29/2003		
Hopto Unloading Bins	Not In Use	Yes	Summer 2002	10/29/2003		
Direct Smelt Building	In Use	Yes	Summer 2002	10/29/2003		
Printed Circuit Board Process	Never Used	Not Required	Not Required	10/29/2003		
potnote: The Direct Smelt Building is use to store road sand, mobile equipment, accumulated DS filter cake, and CAMU ACM prior to shipping for disposal.						

cation	Operational	Has Cleanup	Date of Cleanup	State Inspection/
	Status	Been Completed	and/or Demolition	Confirmation
ORE RECEIVING				
Former Crushing Mill	Not In Use	Yes	Summer 1998	4/7/2004
Sample Mill	Not In Use	Not Required	Not Required	4/7/2004
Sample Mill Baghouse	Not In Use	Yes	8/12/2003	8/28/2003
Hopper				and 4/7/2004
New Crushing Mill Office	Not In Use	Not Required	Not Required	10/29/2003
New Crushing Mill Floor	Not In Use	No		10/29/2003
New Crushing Mill Belts	Not In Use	No		10/29/2003
New Crushing Mill	Not In Use	Yes	8/5/2003	8/28/2003
Baghouse Hopper				10/29/2003
CSHB Truck Bins	Not In Use	No		10/29/2003
A-Conveyor Belt	Not In Use	No		10/29/2003
A-Conveyor Belt Gallery	Not In Use	No		10/29/2003
A-Conveyor Ventilation Pipe	Not In Use	No		10/29/2003
Door to A-Conveyor Vent. Pipe	Not In Use	No		10/29/2003
CSHB Feeders	Not In Use	No		10/29/2003
CSHB Under Feeders	Not In Use	No		10/29/2003
CSHB Feeder Tops	Not In Use	No		10/29/2003
CSHB Tracks	Not In Use	No		10/29/2003
HB Main Bins	Not In Use	No ·	•	10/29/2003 ·
SHB Office	Not In Use	Not Required	Not Required	10/29/2003
CSHB Crane Decks	Not In Use	No		
CSHB Bin 13	Not In Use	Yes	Summer 2002	8/28/2003
CSHB Bin 14	Not In Use	No		10/29/2003
CSHB Bin 15	Not In Use	No		10/29/2003
CSHB Bin 16	Not In Use	Yes	6/26/2003	8/28/2003
CSHB North Baghouse	Not In Use	Yes	8/6/2003	8/28/2003
Hopper				
CSHB South Baghouse	Not In Use	Yes	8/7/2003	8/28/2003
Hopper				
CSHB Feeder Baghouse	Not In Use	Yes	8/11/2003	8/28/2003
Hopper				
No. 6 Baghouse Hopper	Not In Use	Yes	8/11/2003	8/28/2003
CSHB Stack Base	Not In Use	Found Clean	Not Required	8/28/2003
Dustmaster Tank	Not In Use	Yes	8/14/2003	8/28/2003
CSHB I-Bin	In Use	No	Pending 2007	4/7/2004
				12/22/2004
				6/23/2005
				9/1/2005

Footnote: The CSHB (concentrate storage and handling building) and new crushing mill underwent tensive mechanical cleaning during the summers of 2001and 2002. Unfortunately, some of these areas have not been adequately cleaned to meet work plan criteria. Therefore, these areas are assumed to require additional cleaning.

cation	Operational	Has Cleanup	Date of Cleanup	State Inspection/
	Status	Been Completed	and/or Demolition	
SINTER PLANT				
Hammer Mill	Demolished	Yes	September 2006	10/29/03,11/15/06
B-Conveyor Belt	Demolished	Yes	September 2006	10/29/03,11/15/06
B-Conveyor Belt Gallery	Demolished	Yes	September 2006	10/29/03,11/15/06
Nodulizer	Demolished	Yes	September 2006	10/29/03,11/15/06
C-Belt Conveyor	Demolished	Yes	September 2006	10/29/03,11/15/06
Ignition Hopper	Demolished	Yes	September 2006	10/29/03,11/15/06
Feed Hopper	Demolished	Yes	September 2006	10/29/03,11/15/06
1st Deck Ventilation Pipe	Demolished	Yes	September 2006	10/29/03,11/15/06
Sinter Machine	Demolished	Yes	September 2006	10/29/03,11/15/06
Sinter Machine Access	Demolished	Yes	September 2006	10/29/03,11/15/06
Pallet Room	Demolished	Yes	September 2006	10/29/03,11/15/06
2nd Deck Cleanout Chutes (2)	Demolished	Yes	September 2006	10/29/03,11/15/06
2nd Deck Windboxes (11)	Demolished	Yes	September 2006	10/29/03,11/15/06
2nd Deck Ventilation Pipe	Demolished	Yes	September 2006	10/29/03,11/15/06
Fan Deck Oil Room	Demolished	Yes	September 2006	10/29/03,11/15/06
1A Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
1 Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
2 Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
Pan ·	Demolished	Yes	September 2006	10/29/03,11/15/06
Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
F-Belt Conveyor	Demolished	Yes	September 2006	10/29/03,11/15/06
F-Belt Conveyor Gallery	Demolished	Yes	September 2006	10/29/03,11/15/06
Elevator	Demolished	Yes	September 2006	10/29/03,11/15/06
G-Pan	Demolished	Yes	September 2006	10/29/03,11/15/06
E-Belt	Demolished	Yes	September 2006	10/29/03,11/15/06
Smooth Rolls	Demolished	Yes	September 2006	10/29/03,11/15/06
Spike Rolls	Demolished	Yes	September 2006	10/29/03,11/15/06
Returns Tank	Demolished	Yes	September 2006	10/29/03,11/15/06
Vibrating Conveyor	Demolished	Yes	September 2006	10/29/03,11/15/06
Sinter Storage Bin	Demolished	Yes	September 2006	4/7/2005
				10/29/03,11/15/06
Coke Storage Bin	Demolished	Yes	September 2006	4/7/2005
				10/29/03,11/15/06
Sinter Basement	Demolished	Yes	September 2006	10/29/03,11/15/06
Larry Pit	Demolished	Yes	September 2006	10/29/03,11/15/06
Numbers 1,2,3,4,and 5	Demolished	Yes	September 2006	10/29/03,11/15/06
Fan Housing				

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
NTER PLANT (continued)				
Weak Gas Ventilation	Demolished	Yes	September 2006	10/29/03,11/15/06
Flue System			l	
Strong Gas Ventilation	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Flue System				
Baghouse Fan	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Hot Cottrell Fan	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Ignition Furnace Fan	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Downdraft Fan	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Cyclones	Demolished	Yes	Summer 2006	10/29/03,11/15/06
Crushing Circuit	Demolished	Yes	Summer 2006	11/15/06
Ventilation System	1			
No. 7 Baghouse Hopper	Not In Use	Yes	3/3/2003	8/28/2003
No. 8 Baghouse Hopper	Not In Use	Yes	3/3/2003	8/28/2003
Sinter Plant Baghouse	Demolished	Yes	3/3/2003	8/28/03, 11/15/06
Hoppers				
Sinter Storage Building	Not In Use	Yes	9/15/2004	8/28/2003
Ledges, Roof, and Ventilation				
Sinter Storage Building	Not In Use	Yes	8/21/2003	8/28/2003
Floor				_
ack Base ·	Not In Use	No ·	•	•

rootnote: The final cleaning and demolition of the Sinter Plant took place during the second and third quarter 2006. A Sinter Plant Decontamination and Demolition Work Plan was submitted to the Montana Department of Environmental Quality on February 14, 2006. The No.7 baghouse, No. 8 baghouse, sinter storage building, and sinter plant stack are not included in the decontamination and demolition scope of work.

Location	Operational	Has Cleanup	Date of Cleanup	State Inspection/
	Status	Been Completed	and/or Demolition	Confirmation
CID PLANT				
Hot Cottrell Hoppers	Demolished	Yes	Fall 2006	8/28/03, 11/15/06
Hot Cottrell Building	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Hot Cottrell Inlet Header	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Hot Cottrell Outlet Header	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Scrubber Tower Ductwork	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Scrubber Towers	Demolished	Yes	3/5/03, Fall '06	8/28/03, 11/15/06
Mist Precipitator Ductwork	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Mist Precipitator Base	Demolished	Yes	2/25/03, Fall '06	8/28/03, 11/15/06
Mist Precipitator Floor Sump	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Pump Tanks	Not In Use	Yes	2/26/03	8/28/03, 11/15/06
Heat Exchangers	Not In Use	No ·	Fall 2006	4/7/04
Tail Gas Ductwork	Not In Use	No		4/7/04
Tail Gas Stack Base	Not In Use	No		4/7/2004
Acid Dust Bin/Building	Demolished	Yes	3/5/03, Fall '06	8/28/03, 11/15/06
93% Acid Storage Tanks	Not In Use	Yes	Oct./Nov. 2005	4/7/2004
93% Dry/Intermediate/Final	Not In Use	Yes	Oct./Nov. 2005	4/7/2004
Tower Tanks (3 Tanks)				6/23/2005
98% Acid Storage Tank	Demolished	Yes	Oct./Nov. 2005	4/7/04, 11/15/06
	j			6/23/2005
		•		9/1/2005
Decolorization Acid Tanks	Not In Use	Yes	Oct./Nov. 2005	6/23/2005
Hydrogen Peroxide Tanks	In Use	Not Required	Not Required	4/7/2004
Converter Catalyst	Mothballed	Not Required	Not Required	4/7/2004
Acid Cooling Tower Base	Not In Use	Yes	Summer 2002	4/7/2004
Acid Dust Recovery Building	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
80 Ton Dust Recovery Tank	Demolished	Yes	Fall 2006	4/7/04, 11/15/06
Hot Cottrell Access Piping	Demolished	Yes	Fall 2006	4/7/04, 11/15/06

Footnote: The strong acid contained in acid plant storage vessels was removed during the fourth quarter 2005. The converter catalyst remains in mothballed status in accordance with Noram Engineering and Consulting, Ltd. recommendations. A February 3, 2003 letter from Asarco to the Montana Department of Environmental Quality discusses the details of these recommendations. The hot Cottrell, scrubber towers, mist precipitator building, pump tanks, heat exchangers, and acid dust bin/building are scheduled for cleaning and demolition in the Fall of 2006.

Location	Operational	Has Cleanup	Date of Cleanup	State Inspection/
	Status	Been Completed	and/or Demolition	•
J.CAST FURNACE				
Matte Breaking Building (Old)	Not In Use	Yes	8/23/05	10/29/03, 4/7/05
				6/23/05, 9/1/05
Matte Breaking Building (New)	Not In Use	Found Clean	Not Required	10/29/03, 4/7/05
Highline 47 Feeder Belts	Not In Use	Yes	10/11/2004	10/29/03, 4/7/05
	<u> </u>			6/23/2005
Highline 47 Open Bins	Not In Use	Yes	9/11/03,10/15/04	10/29/03, 4/7/05
Highline Storage Bins	Some In Use	Yes	Summer 2001	10/29/03, 4/7/05
Portland Cement Silo	Not In Use	Yes	9/3/2003	10/29/03,4/7/05
Blast Furnace Dust Silo	Not In Use	Yes	Summer 2001	4/7/2005
Blast Charge Floor	Not In Use	Yes	8/15/2004	10/29/03, 4/7/05
Scrap Conveyor	Demolished	Yes ·	9/20/2004	4/7/2005
				6/23/2005
Outside Blast Flue	Not In Use	Yes	10/20/2004	4/7/2005
Blast Feed Floor	Not In Use	Yes	11/10/2004	4/7/2005
Blast Ventilation/Process	Not In Use	Yes	11/10/2004	4/7/2005
Gas System				
Blast Agglomerator Building	Demolished	Yes	8/26/2003	10/29/2003
Blast Agglomerator Feed Tank		Yes	Summer 2001	10/29/2003_
No. 1 Blast Tapping Floor	Not In Use	Yes	12/05/2004	10/29/03, 4/7/05
•			•	6/23/2005 ·
No. 3 Blast Tapping Floor	Not In Use	Yes	12/05/2004	10/29/03, 4/7/05
				6/23/2005
No.1 and 3 Crucible	Not In Use	Not Required	Not Required	4/7/2005
				6/23/2005
Motor Switch Tracks	Not In Use	Yes	12/10/2004	4/7/2005
			· · · · · · · · · · · · · · · · · · ·	6/23/2005
No.1 Blast Furnace Flue	Not In Use	Yes	12/2005	6/23/05,
				12/22/05,1/9/06
Blast Furnace Flue	Not In Use	Yes	Summer 2002	
Blast Furnace Flue Crossover	Not In Use	No		
Monier Flue at Baghouse Inlet	Not In Use	Yes	Third Qrt. 2005	6/23/2005,
-				9/1/2005,
				9/16/2005,
Blast Baghouse Cellars	Not In Use	Yes	Summer 2001	
Blast Baghouse Thimble Floor	Not In Use	Not Required	Not Required	
Blast Furnace Dust Cleanout	Not In Use	No		
Baghouse Hopper				
Blast Furnace Dust Cleanout		No		
Railroad Loadout Baghouse		Not Required	Not Required	
Blast Stack Base		No		11

potnote: The metal inside the No. 1 and 3 furnace crucibles cannot be removed without damaging the facility. The dust on the baghouse thimble floor cannot be removed without damaging the baghouse bags. The highline bins that are no longer used were vacuumed in the summer of 2001.

cation	Operational	Has Cleanup	Date of Cleanup	State Inspection/
	Status	Been Completed	and/or Demolition	Confirmation
DROSS PLANT				
Speiss Long Pit	Demolished	Yes	Sum '02, Fall '06	6/23/05, 11/15/06
Speiss Short Pit	Demolished	Yes	Sum '02. Fall '06	6/23/05, 11/15/06
Under Reverb Furnace	Demolished	Yes	Fall 2006	6/23/05, 11/15/06
No. 4 Kettle Setting	Demolished	Yes	Fall 2006	6/23/05, 11/15/06
Under Kettle Floor	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Kettles	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Kettle Settings	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Ventilation System	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Lead Granulator	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Lead Granulator Belt	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Dross Furnace Upper Deck	Demolished	Yes	Fall 2006	11/15/06
On Kettle Floor	Demolished	Yes	Fall 2006	11/15/06
Dross Bullion Floor	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Speiss Pit Doors	Demolished	Yes	9/15/03, Fall '06	2/23/04, 11/15/06
Lead Pots	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Dross Reverb Furnace	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Dross Plant Crane Deck	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
Dross Plant Floor	Demolished	Yes	Fall 2006	2/23/04, 11/15/06
peiss Cleanout Bin *	Demolished	Yes	Sum '02, Fall '06	2/23/04, 11/15/06
Nouter Dust Tank	Demolished	Yes	9/16/03, Fall '06	2/23/04, 11/15/06
Dross Plant Baghouse	Not In Use	Yes	2/24/2003	2/23/04
Hoppers				
Dross Plant Stack	Not In Use	Yes	9/15/2003	2/23/04

Footnote: The majority of the material within the kettles, kettle settings, lead pots, lead granulating belt and under the dross reverb was removed shortly after operations were suspended in April 2001. The dross reverb furnace was drained before April 2001. The material that remains in many of these process units cannot be removed without damaging the vessels. The entire dross plant was cleaned and demolished in the Fall of 2006.

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
- SRMER ZING PLANT				
Tetrahedrite Drying and Baghouse	Demolished	Not Required	Not Required	4/7/2004 and 9/24/2004
Former Zinc Furnace	Demolished	Not Required	Not Required	4/7/2004
Former Zinc Furnace Retaining Wall	Cleaned & Demolished	Yes	11/23/2004	8/8/03, 4/7/04 9/24/04, 1/27/05
Zinc Plant Holding Furnace	Cleaned & Demolished	Yes	8/8/2005	6/23/2005 9/1/2005
Zinc Plant Balloon Flue	Cleaned & Demolished	Yes	10/24/2004	8/8/03, 4/7/04 9/24/04, 1/27/05
Zinc Plant Cooling Tubes	Cleaned & Demolished	Yes	10/30/2004	8/8/03, 4/7/04 9/24/04, 1/27/05
Zinc Plant Main Railcar Loadout	Cleaned & Demolished	Yes	11/12/2004	8/8/03, 4/7/04 9/24/04, 1/27/05
Zinc Plant Baghouse	Cleaned & Demolished	Yes	12/10/2004	8/8/03, 4/7/04 9/24/04,10/28/04 1/27/05
Zinc Plant Baghouse Bags	Cleaned & Demolished	Yes	7/13/2004	8/8/03, 4/7/04 9/24/04,10/28/04
Zinc Plant Loadout Building	Cleaned & Demolished	Yes	12/1/2004 ·	8/8/03, 4/7/04 9/24/04, 1/27/05
⊨inc Plant Stack	Demolished	Yes	1/24/2005	1/27/2005

Location	Operational Status	Has Cleanup Been Completed	Date of Cleanup and/or Demolition	State Inspection/ Confirmation
WATER TREATMENT				
Scrubber Blowdown	Not In Use	Yes	12/14/2004	1/27/2005
Recirculation Tanks		<u></u>		
Scrubber Blowdown Clarifier	Not In Use	Yes	12/17/2004	1/27/2005
Soda Ash Tank and Feed	Not in Use	Yes	12/10/2004	1/27/2005
System				
Sludge Storage Tank	Not In Use	Yes	12/13/2004	1/27/2005
Sulfur Dioxide Stripper	Not In Use	Yes	12/16/2004	1/27/2005
Neutralization Building	Not In Use	Yes	12/20/2004	1/27/2005
Tank				
Neutralization Building	Not In Use	Yes	12/20/2004	2/23/2004
Plate Clarifier	1		·	1/27/2005
Filter Press Water	Not In Use	Yes	12/22/2004	1/27/2005
Holding Tank				
Neutralization Building	Not In Use	Yes	12/22/2004	2/24/2004
Surge Tank	1			1/27/2005
Filter Press Discharge Tank	Not In Use	Yes	12/8/2004	1/27/2005
HDS Water Treatment	In Use	Not Required	Not Required	2/23/2004
Sludge Recovery Operations	In Use	Not Required	Not Required	2/23/2004
Carwash Equipment	In Use	Not Required	Not Required	2/23/2004
ashdown		•	•	•
HERO Facility	Never Used	Not Required	Not Required	2/23/2004

2007 CLEANING AND DEMOLITION PROJECT ASARCO EAST HELENA PLANT

2007 WORK PLAN

APPENDIX B

EPA LETTER REQUESTING INTERIM MEASURES WORK PLAN FOR THE BLAST FURNACE FLUE AND MONER FLUE (MARCH 29, 2007)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY **REGION 8** 1595 Wynkoop Street



DENVER, CO 80202-1129 Phone 800-227-8917

http://www.epa.gov/region08

Ref: 8ENF-RC

March 29, 2007

CERTIFIED MAIL: Return Receipt Requested

Mr. Jon Nickel ASARCO East Helena Plant 100 Smelter Road P.O. Box 1230 East Helena, MT 59635

> RE: Submission of Interim Measures Work Plan for the Blast Furnace Flue and the Monier Flue at ASARCO East Helena Smelter Facility Pursuant to Paragraph 36, Consent Decree, CV 98-3-H-CCL

Dear Mr. Nickel:

Pursuant to Paragraph 36 of the federal Consent Decree, CV 98-3-H-CCL, EPA requests submittal of an interim measures work plan ("IM Work Plan") for the blast furnace flue and the Monier flue, which is no less comprehensive than the IM Work Plan described in the Final CAP, within sixty (60) days of your receipt of this letter, which has been faxed with a confirmed receipt of today's date and mailed to you by certified mail. The IM Work Plan must address the requirements of paragraphs 37 through 40 of the federal Consent Decree.

This interim measure work plan shall address the removal of the blast furnace flue and the Monier flue. It has been stated by ASARCO representatives that the deteriorating nature of this flue, which contains highly contaminated flue dust, presents an immediate or potential threat to human health or the environment and is a priority for removal in 2007 to mitigate the potential release to air, soils, and groundwater. The scope of this work plan must include removal of the structures and flue dust, collection of pre-demolition samples, characterization of the soils, proposal of soil criteria for contaminant excavation depth and confirmatory sampling, spill prevention and containment measures for the demolition of the flue, and any special handling or waste management procedures required for the flue dust.

If you have questions on this letter or any related matter, please contact me at (303) 312-6503.

Sincerely,

Linda Jacobson

EPA Project Manager

cc: Denise Kirkpatrick, MDEQ Thomas Aldrich, ASARCO Charles Figur, 8ENF-L Julie DalSoglio, EPA-MOO

2007 CLEANING AND DEMOLITION PROJECT ASARCO EAST HELENA PLANT

2007 WORK PLAN

APPENDIX C

STANDARD OPERATING PROCEDURES (SOP) FOR SURFACE SOILS SAMPLE COLLECTION

EXPOSED AREA SOIL SAMPLE COLLECTION AND ANALYSIS MATRIX

SOP/Form Number	Title	Key words
HF-SOP-2	Determination, Identification, and Description of	· · · · · · · · · · · · · · · · · · ·
•	Field Sampling Sites	Sampling
HF-SOP-4	Packing and Shipping Samples	Sampling
HF-SOP-5	Chain-of-Custody	Documentation
HF-SOP-7	Decontamination of Sampling Equipment	Decontamination
HF-SOP-29	Labeling and Documentation of Samples	Documentation
HF-SOP-31	Field Notebooks	Documentation
HF-SOP-58	Management and Validation of Field and Laboratory Data	Documentation
HS-SOP-6	Procedure For Collecting Surface Soil Samples	Soil
HS-SOP-13	Rinsate Blank Collection	Sampling
HS-SOP-57	Soil Sampling Procedure For Test Pits	Soil

2007 CLEANING AND DEMOLITION PROJECT ASARCO EAST HELENA PLANT

2007 WORK PLAN

APPENDIX D

FUMED SLAG ANALYTICAL DATA

ANALYTICAL SUMMARY REPORT

May 02, 2005

Iver Johnson MT DEQ PO Box 200901 Helena, MT 59620

COPY

RECEIVED

MAY 0 5 2005

Dept. of Enviro, Quality Waste & Underground Tank Management Bureau

Workorder No.: H05040130

Project Name: ASARCO Slag Pile

Energy Laboratories Inc received the following 10 samples from MT DEQ on 4/14/2005 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H05040130-001	ASP01-B3	04/14/05 14:15	04/14/05	Solid	Metals by ICP/ICPMS, Total Mercury in Solid By CVAA Digestion, Total Metals Digestion, Mercury by CVAA
H05040130-002	ASP02-B5	04/14/05 14:21	04/14/05	Solid	Same As Above
H05040130-003	ASP03-B14	04/14/05 14:28	04/14/05	Solid	Metals by ICP/ICPMS, Total Chloride, Sulfate Mercury in Solid By CVAA Moisture Moisture Polychlorinated Biphenyls (PCB's) pH Digestion, Total Metals Digestion, Mercury by CVAA Saturated Paste Extraction Sonication Extraction Soil Sonication Extraction Semi-Volatile Organic Compounds, PAHs Volatile Organics, Methanol Extraction 8260-Volatile Organic Compounds - Short Lis
H05040130-004	ASP04-C4	04/14/05 14:37	04/14/05	Solid	Metals by ICP/ICPMS, Total Mercury in Solid By CVAA Digestion, Total Metals Digestion, Mercury by CVAA
H05040130-005	ASP05-C9	04/14/05 14:44	04/14/05	Solid	Metals by ICP/ICPMS, Total Chloride, Sulfate Mercury in Solid By CVAA Moisture Moisture Polychlorinated Bipheayis (PCB's) pH Digestion, Total Metals Digestion, Mercury by CVAA Saturated Paste Extraction Sonication Extraction Soil Sonication Extraction Semi-Volatile Organic Compounds, PAHs Volatile Organics, Methanol Extraction 8260-Volatile Organic Compounds - Short List

E CAUSORZATIORII	<u> </u>			97/00.00/11
H0504C130-006	ASP06-D16	04/14/05 14:50 04/14/05	Solid	Metals by ICP/ICPMS, Total Mercury in Solid By CVAA Digestion, Total Metals Digestion, Mercury by CVAA
H05040130-007	ASP07-F3	04/14/05 14:57 04/14/05	Solid	Same As Above
H05040130-008	ASP08-G2	04/14/05 15:04 04/14/05	Solid	Metals by ICP/ICPMS, Total Chloride, Sulfate Mercury in Solid By CVAA Moisture Moisture Polychlorinated Biphenyls (PCB's) pH Digestion, Total Metals Digestion, Mercury by CVAA Saturated Paste Extraction Sonication Extraction Soil Sonication Extraction Semi-Volatile Organic Compounds, PAHs Volatile Organics, Methanol Extraction 8260-Volatile Organic Compounds - Short Lis
H05040130-009	ASP09-G4	04/14/05 15:07 04/14/05	Solid	Metals by ICP/ICPMS, Total Mercury in Solid By CVAA Digestion, Total Metals Digestion, Mercury by CVAA
H05040130-010	ASP10-H16	04/14/05 15:15 04/14/05	Solid	Same As Above

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative or Report.

If you have any questions regarding these tests results, please call.

Report Approved By



MT DEQ Client:

Project: ASARCO Slag Pile

Lab ID: H05040130-001

Client Sample ID: ASP01-B3

Report Date: 05/02/05

Collection Date: 04/14/05 14:15

Date Received: 04/14/05

Matrix: Solid

- · ·				1	MCL/		MCL/								
Analyses	Result	Units	Qual	RL	QCL	Method	Analysis Date / By								
METALS, TOTAL															
Antimony	34.9	mg/kg		5.0		SW6020	04/27/05 00:49 / rlh								
Arsenic	. 130	mg/kg		5.0		SW6020	04/27/05 00:49 / rlh								
Beryllium	ND	mg/kg		5.0		SW6010B	04/22/05 03:48 / jjw								
Cadmium	3.1	mg/kg		1.0		SW6010B	04.'20/05 19:24 / jjw								
Chromium	60.8	mg/kg		5.0		SW6010B	04/20/05 19:24 / jjw								
Cobalt	164	mg/kg		5.0		SW6010B	04/20/05 19:24 / jjw								
Iron	196000	mg/kg	D	40		.SW6010B	04.'20/05 19:28 / jjw								
Lead	134	mg/kg	•	5.0		SW6010B	04/20/05 19:28 / jjw								
Manganese	11400	mg/kg		5.0		SW6010B	04/22/05 03:48 / jjw								
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 13:51 / KC								
Nickel	8.4	mg/kg		5.0		SW6010B	04/20/05 19:24 / jjw								
Phosphorus .	652	mg/kg	:	10		SW6010B	04/22/05 03:48 / jjw								
Selenium	. 6.4	mg/kg		5.0		SW6020	04 27/05 00:49 / rlh								
Zinc	13200	mg/kg		5.0		SW6010B	04 20/05 19:28 / jjw								

Report Definitions: RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.



Client: MT DEQ

Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04/14/05 14:21

Lab ID: H05040130-002

Date Received: 04/14/05

Client Sample ID: ASP02-B5

Matrix: Solid

	MCL/								
Analyses	Result	Units	Qual	RL QCL	Method	Analysis Date / By			
METALS, TOTAL			•			•			
Antimony	46.7	mg/kg		5.0	SW6020	04/27/05 00:56 / rlh			
Arsenic	135	mg/kg		5.0	SW6020	04/27/05 00:56 / rih			
Beryllium	ND	mg/kg		5.0	SW6010B	04/22/05 03:51 / jjw			
Cadmium	4.1	mg/kg		1.0	SW6010B	04/20/05 19:32 / jjw			
Chromium	59.4	mg/kg		5.0	SW6010B	04/20/05 19:32 / jjw			
Cobalt	207	mg/kg		5.0	SW6010B	04/20/05 19:32 / jjw			
Iron	243000	mg/kg	D	80	SW6010B	04/22/05 03:51 / jjw			
Lead	140	mg/kg		5.0	SW6010B	04/20/05 19:32 / jjw			
Manganese .	11700	mg/kg		5.0	SW6010B	04/22/05 03:51 / jjw			
Mercury	ND	mg/kg		1.0	SW7471A	04/25/05 13:57 / KC			
Nickel	20.4	mg/kg		5.0	SW6020	04/27/05 00:56 / rlh			
Phosphorus	584	mg/kg	•	10	SW6010B	04/22/05 03:51 / jjw			
Selenium	8.5	mg/kg		5.0	SW6020	04/27/05 00:56 / rlh			
Zinc	16900	mg/kg		5.0	SW6010B	04/22/05 03:51 / jjw			

Report Definitions: RL - Analyte reporting limit.

QCL - Quality control limit.

MCL - Maximum contaminant level.

D - RL increased due to sample matrix interference.



Client: MT DEQ

Project: ASARCO Slag Pile

Lab ID: H05040130-003

Client Sample ID: ASP03-B14

Report Date: 05/02/05

Collection Date: 04/14/05 14:28

Date Received: 04/14/05

Matrix: Solid

					•		
Analyses	Result	Units	Qual		MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	0.500	wt%		0.0100)	SW3550A	04/22/05 08:15 / MC
CHEMICAL CHARACTERISTICS		•		÷			
pH, 1:2	8.6	s.u, ·		0.1		ASA10-3	04/25/05 16:18 / srm
Chloride, 1:2	1.99	mg/kg		1.00		ASA10-3	04/26/05 11:49 / qed
METALS, TOTAL							
Antimony	33.7	mg/kg		5.0		SW6020	04/27/05 01:03 / rlh
Arsenic	118	mg/kg		5.0		SW6020	04/27/05 01:03 / rlh
Beryllium	ND	mg/kg		5.0		SW60103	04/22/05 04:02 / jjw
Cadmium	2.6	mg/kg		1.0		SW6010B	04/20/05 19:35 / jjw
Chromium	67.1	mg/kg		5.0		SW60105	04/20/05 19:35 / jjw
Cobalt	117	mg/kg		5.0		SW60106	04/20/05 19:35 / jjw
Iron	264000	mg/kg	D	80		SW60105	04/22/05 04:02 / jjw
Lead	63.8	mg/kg		5.0		SW60105	04/20/05 19:35 / jiw
Manganese	13200	mg/kg		5.0		SW60108	04/22/05 04:02 / jjw:
Mercury	ND	mg/kg		1.0		SW7471A	04/25/05 13:59 / KC
Nickel	14.5	mg/kg		5.0		SW6020	04/27/05 01:03 / :1h
Phosphorus	612	mg/kg		10		SW60105	04/22/05 04:02 / jjw
Selenium	8.4	mg/kg		5.0		SW6020	04/27/05 01:03 / ก่ก
Zinc	13500	mg/kg		5.0		SW60193	04/22/05 04:02 / jjw
VOLATILE ORGANIC COMPOUNDS							•
Bromoform .	ND	mg/kg		0.20		SW82605	04/21/05 16:42 / trr
Benzene	ND	mg/kg		0.20		SW82653	04/21/05 16:42 / trr
Bromobenzene	ND	mg/kg		0.20		SW82603	04/21/05 16:42 / trr
Bromochloromethane	ND	mg/kg		0.20		SW82698	04/21/05 16:42 / trr
Bromodichloromethane	ND	mg/kg		0.20		SW82593	04/21/05 16:42 / trr
Bromomethane	ND	rng/kg		0.20		SW82605	04/21/05 16:42 / trr
Carbon tetrachloride	ND	mg/kg		0.20		SW82603	04/21/05 16:42 / trr
Chlorobenzene	ND	mg/kg		0.20		SW82503	04/21/05 16:42 / trr
Chloroethane	ND	mg/kg		0.20		SW8260E	04/21/05 16:42 / trr
2-Chloroethyl vinyl ether	GN	mg/kg		0.20		SW82698	04/21/05 16:42 / trr
Chloroform	МD	mg/kg		0.20		SW8260E	04/21/05 16:42 / trr
Chloromethane	СИ	mg/kg		0.20		SW8265E	04/21/05 16:42 / trz
2-Chlorotoluene	ND	mg/kg	•	0.20		SW8250E	04/21/05 16:42 / trr
-Chlorotoluene	DИ	mg/kg		0.20		SW8265E	04/21/05 16:42 / tr:
Chlorodibromomethane	ND	mg/kg		0.20		SW82605	04/21/05 16:42 / tir
2-Dibromoethane	ND	mg/kg		0.20		SW82603	04/21/05 16:42 / tr:
Dibromomethane	DN	mg/kg		0.20		SW8267E	04/21/05 16:42 / tir
.2-Dichlorobenzene	ND	mg/kg		0.20		SW82693	04/21/05 16:42 / trr

Report

RL - Analyte reporting limit.

Definitions:

QCL - Quality control limit.

MCL - Maximum contaminant level ND - Not detected at the reporting limit.

D - RL increased due to sample matrix interference.



Client: MT DEQ

Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04'14/05 14:28

Lab ID: H05040130-003

Date Received: 04'14/05

Client Sample ID: ASP03-B14

Matrix: Solid

	MCL/						
Analyses	Result	Units	Qual RI	QCL	Method	Analysis Date / B	
VOLATILE ORGANIC COMPOUNDS							
1,3-Dichlorobenzene	ND	mg/kg	0.20		SW8260B	04/21/05 16:42 / trr	
1,4-Dichlorobenzene	ND	mg/kg	0.20)	SW8260B	04/21/05 16:42 / trr	
Dichlorodifluoromethane	· ND	mg/kg	0.20)	SW8260B	04/21/05 16:42 / trr	
1,1-Dichloroethane	ND	mg/kg	. 0.20)	SW8260B	04/21/05 16:42 / trr	
1,2-Dichloroethane	ND	mg/kg	0.20)	SW8260B	. 04'21/05 16:42 / trr	
cis-1,2-Dichloroethene	ND	mg/kg	0.20)	SW8260B	04/21/05 16:42 / trr	
1,1-Dichloroethene	ND	mg/kg	0.20)	SW8260B	04/21/05 16:42 / trr	
trans-1,2-Dichloroethene	ND	mg/kg	0.20)	SW8260B	04/21/05 16:42 / trr	
1,2-Dichloropropane	ND	mg/kg	0.20)	SW8260B	04.'21/05 16:42 / trr	
1,3-Dichloropropane	ND	mg/kg	0.20)	SW8260B	04/21/05 16:42 / trr	
2.2-Dichloropropane	ND	mg/kg	0.20	1	SW8260B	04/21/05 16:42 / trr	
1,1-Dichloropropene	- ND	mg/kg	. 0.20)	SW8260B	04/21/05 16:42 / trr	
cis-1,3-Dichloropropene	ND	mg/kg	0.20)	SW8260B	04/21/05 16:42 / trr	
rans-1,3-Dichloropropene	. ND	mg/kg	0.20		SW8260B	04:21/05 16:42 / trr	
Ethylbenzene	DИ	mg/kg	0.20		SW8260B	04'21/05 16:42 / trr	
Methyl tert-butyl ether (MTBE)	СИ	mg/kg	0.20		SW3260B	04/21/05 16:42 / trr	
Methylene chloride	ND	mg/kg	0.20		SW8260B	04'21/05 16:42 / trr	
Methyl ethyl ketone	ND	mg/kg	4.0		SW8260B	04'21/05 16:42 / trr	
Styrene	ND .	mg/kg	0.20		SW8260B	04.'21/05 16:42 / tm	
1.1.1.2-Tetrachloroethane	ND	mg/kg	0.20		SW8260B	04/21/05 16:42 / trr	
1.2.2-Tetrachloroethane	DN	mg/kg	Ö.20		SW8260B	04:21/05 16:42 / trr	
Tetrachloroethene	ND	mg/kg	0.20		SW8260B	04/21/05 16:42 / trr	
oluene	ND	mg/kg	0.20	•	SW8260B	04:21/05 16:42 / trr	
,1,1-Trichloroethane	ND	mg/kg	0.20		SW8260B	04/21/05 16:42 / trr	
,1,2-Trichloroethane	ND	mg/kg	0.20		SW8260B	04/21/05 16:42 / trr	
richloroethene	DN	mg/kg	0.20		SW8260B	04'21/05 16:42 / trr	
richlorofluoromethane	ND	mg/kg	0.20		SW8260B	04/21/05 16:42 / trr	
,2,3-Trichloropropane	ND	mg/kg	0.20		SW8260B	04/21/05 16:42 / trr	
/inyl chloride	ND	mg/kg	0.20		SW8260B	04/21/05 16:42 / trr	
n+p-Xylenes	ND	mg/kg	0.20		SW8260B	04/21/05 16:42 / trr	
	ND					04'21/05 16:42 / tm	
-Xylene		mg/kg	0.20	70 100	SW8260B		
Surr: p-Bromofluorobenzene	134	%REC		78-160	SW8260B	04.'21/05 16:42 / trr	
Surr: Dibromofluoromethane	116	%REC		70-132	SW8260B	04/21/05 16:42 / trr	
Surr: 1,2-Dichloroethane-d4	114	%REC		60-136	SW2260B	04/21/05 16:42 / trr	
Surr: Toluena-d8	120	%REC		75-138	SW8260B	64/21/05 16:42 / trr	
EMI-VOLATILE ORGANIC COMPOUND	s						
cenaphthene	ND	mg/kg	0.33		SW3270C	04/21/05/13:56 / sm	
cenaphthylene	ND	mg/kg	0.33		SW2270C	34 21/05 13:56 / sm	
nthracene	ND	mg/kg	0.33		SV/8270C	94:21/05 13:55 / sm	
enzo(a)anthracene	ND	mg/kg	0.23		SW3270C	64/21/05 13:56 / sm	

Report

RL - Analyte reporting limit.

Definitions:

QCL - Quality control limit.

MCL - Maximum contaminant level.



Client: MT DEQ

Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04/14/05 14:28

Lab ID: H05040130-003

Date Received: 04/14/05

Client Sample ID: ASP03-B14

Matrix: Solid

			•		MCL/		
Analyses	Result	Units	Qual	RL	QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC CON	IPOUNDS						
Benzo(a)pyrene	. ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Benzo(b)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Benzo(g,h,i)perylene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Benzo(k)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Chrysene	, ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Dibenzo(a,h)anthracene	ND	mg/kg		0.33		SW\$270C	04/21/05 13:56 / sm
Fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 13:55 / sm
Fluorene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Indeno(1,2,3-cd)pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Naphthalene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Phenanthrene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 13:56 / sm
Surr. 2-Fluorobiphenyl	82.5	%REC			30-115	SW8270C	04/21/05 13:55 / sm
Surr: Nitrobenzene-d5	83.7	%REC			23-120	SW8270C	04/21/05 13:56 / sm
Surr: Terphenyl-d14	98.6	%REC			18-137	SW8270C	04/21/05 13:55 / sm
POLYCHLORINATED BIPHENYL	S (PCB'S)						
Arocior 1016	GN	mg/kg		0.017		SW8082	04/24/05 03:13 / iaw
Arocior 1221	ND	mg/kg		0.017		SW8082	04/24/05 03:13 / law
Aroclor 1232	ND	mg/kg		0.017		SW8082	04/24/05 03:13 / law
Aroclor 1242	GN	mg/kg		0.017		SW8082	04/24/05 03:13 / law
Aroclor 1248	ND	mg/kg		0.017		SW8082	04/24/05 03:13 / law
Aroclor 1254	ND	mg/kg		0.017		SW8082	04/24/05 03:13 / law
Aroclor 1260	ND	mg/kg		0.017		SW8082	04/24/05 03:13 / law
Aroclor 1262	ND	mg/kg		0.017	•	SW8082	04/24/05 03:13 / law
Aroclar 1268	ND	mg/kg		0.017		SW8082	04/24/05 03:13 / law
Surr: Decachlorobiphenyl	96.0	%REC		*	50-126	SW8082	04/24/05 03:13 / law
Surr: Tetrachloro-m-xylene	86.0	%REC			42-115	SW8082	04/24/05 03:13 / law

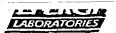
Report

RL - Analyte reporting limit.

Definitions:

QCL - Quality control limit.

MCL - Maximum contaminant is reli



Client: MT DEQ.

Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04/14/05 14:37

Lab ID: H05040130-004

Date Received: 04/14/05

Client Sample ID: ASP04-C4

Matrix: Solid

				MCL/		
Analyses	Result	Units	Qual	RL QCL	Method	Analysis Date / By
METALS, TOTAL						
Antimony	43.5	mg/kg		5.0	SW6020	04/27/05 01:10 / rlh
Arsenic	155	mg/kg		5.0	SW6020	04/27/05 01:10 / rlh
Beryllium	ND	mg/kg		5.0	SW6010B	04/22/05 04:06 / jjw
Cadmium	5.1	mg/kg		1.0	SW6010B	04/20/05 19:39 / jjw
Chromium	71.2	mg/kg		5.0	SW6010B	04/20/05 19:39 / jjw
Cobalt	212	mg/kg		5.0	SW6010B	04/20/05 19:39 / jjw
lron .	273000	mg/kg	D	80	SW6010B	04/22/05 04:06 / jjw
Lead	364	mg/kg	•	5.0	SW6010B	04/20/05 19:39 / jjw
Manganese	12200	mg/kg		5.0	SW6010B	04/22/05 04:06 / jjw
Mercury	ND	mg/kg		1.0	SW7471A	04/25/05 14:01 / KC
Nickel	22.9	mg/kg		5.0	SW6020	04/27/05 01:10 / rlh
Phosphorus	. 586	mg/kg		10	SW6010B	04/22/05 04:06 / jjw
Selenium	12.1	mg/kg		5.0	SW6020	04/27/05 01:10 / rlh
Zinc	17900	mg/kg		5.0	SW6010B	04/22/05 04:06 / jjw

Report

RL - Analyte reporting limit.

Definitions:

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.



MT DEQ Client:

Project: ASARCO Slag Pile

Lab ID: H05040130-005

Client Sample ID: ASP05-C9

Report Date: 05/02/05

Collection Date: 04/14/05 14:44

Date Received: 04/14/05

Matrix: Solid

				MCI		
Analyses	Result	Units	Qual	RL QCI		Analysis Date / By
PHYSICAL CHARACTERISTICS						
Moisture	0.800	wt%	•	0.0100	SW3550A	04/22/05 08:15 / MC
CHEMICAL CHARACTERISTICS						
pH, 1:2	9.0	s.u.		0.1	ASA10-3	04/25/05 16:18 / s.m
Chloride, 1:2	2.89	mg/kg		1.00	ASA10-3	04/26/05 12:13 / qed
METALS, TOTAL						•
Antimony	37.1	mg/kg		5.0	SW6020	04/27/05 01:44 / rlh
Arsenic	. 117	mg/kg	•	5.0	SW6020	04/27/05 01:44 / rlh
Beryllium	. ND	mg/kg		5.0	SW6010B	04/22/05 04:13 / jjw
Cadmium	3.1	mg/kg		1.0	SW6010B	04/20/05 19:42 / jiw
Chromium	74.4	mg/kg		5.0	SW60108	04/20/05 19:42 / jjw
Cobalt	153	mg/kg		5.0	SW60105	04/20/05 19:42 / jj:w
Iron	252000	mg/kg	D	80	SW60105	04/22/05 04:13 / jįw
Lead	160	mg/kg		5.0	SW60105	04/20/05 19:42 / jjw
Manganese	11800	mg/kg		5.0	SW60103	04/22/05 04:13 / jjw
Mercury	ND	mg/kg		1.0	SW7471A	04/25/05 14:04 / KC
Nickel	15.9	mg/kg		5.0	SW6020	04/27/05 01:44 / rlh
Phosphorus .	707	mg/kg		10	SW60105	04/22/05 04:13 / jj.v
Selenium	12.7	mg/kg		5.0	SW6020	04/27/05 01:44 / rlis
Zinc .	18500	mg/kg		5.0	SW60103	04/22/05 04:13 / jjw
VOLATILE ORGANIC COMPOUNDS						
Bromoform	ND	mg/kg		0.20	SW82605	04/21/05 17:16 / trr,
Benzene	ND	mg/kg		0.20	SW8260E	04/21/05 17:16 / trr
Bromobenzene	ND	mg/kg		0.20	SW82605	04/21/05 17:16 / trr
Bromochloromethane	ND	mg/kg		0.20	SW8260B	04/21/05 17:16 / trr
Bromodichloromethane	DИ	mg/kg		0.20	SW82503	04/21/05 17:16 / trr
Bromomethane	ND	mg/kg		0.20	SW82603	04/21/05 17:16 / trr
Carbon tetrachloride	ND	mg/kg		0.20	SW8260B	04/21/05 17:16 / trr
Chlorobenzene	ND	mg/kg		0.20	SW82503	04/21/05 17:16 / trr
Chloroethane	СИ	mg/kg		0.20	SW82503	04/21/05 17:16 / trr
2-Chloroethyl vinyl ether	ND	mg/kg		0.20	SW82603	04/21/05 17:16 / trr
Chloroform	ND	mg/kg		0.20	SW8260B	04/21/05 17:16 / trr
Chloromethane	ND	mg/kg		0.20	SW8260B	04/21/05 17:16 / tar
2-Chlorotoluene	СИ	mg/kg		0.20	SW82603	04/21/05 17:16 / tir
4-Chlorotoluene	ИD	mg/kg		0.20	SW82605	04/21/05 17:16 / to:
Chlorodibromomethane	ND	mg/kg		0.20	SW8260B	04/21/05 17:16 / t.r
1,2-Dibromoethane	ND	mg/kg		0.20	SW82605	04/21/05 17:16 / trr
Dibromomethane	СИ	mg/kg		0.20	SW82603	04/21/05 17:16 / trr
1,2-Dichlorobenzene	ND	mg/kg		0.20	SW8260B	04/21/05 17:16 / hr

Report

RL - Analyte reporting limit.

Definitions:

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.



Client: MT DEQ Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04/14/05 14:44

Lab ID: H05040130-005

Date Received: 04/14/05

Client Sample ID: ASP05-C9

Matrix: Solid

,				MCL/		
Analyses	Result	Units	Qual 1	RL QCL	Method	Analysis Date / B
VOLATILE ORGANIC COMPOUNDS						
1,3-Dichlorobenzene	ND	mg/kg	(.20	SW\$260B	. 04/21/05 17:16 / trr
1,4-Dichlorobenzene	ND	mg/kg	(.20	SW8260B	04/21/05 17:16 / trr
Dichlorodifluoromethane	ND	mg/kg ·	. (.20	SW8260B	04/21/05 17:16 / trr
1,1-Dichloroethane	ND	mg/kg	C	.20	SW\$260B	04'21/05 17:16 / trr
1,2-Dichloroethane	ND	mg/kg	C	.20	SW8260B	04'21/05 17:16 / trr
cis-1,2-Dichloroethene	ND	mg/kg	C	.20	SW8260B	04:21/05 17:16 / trr
1,1-Dichloroethene	, ND	mg/kg	C	.20	SW8260B	04'21/05 17:16 / trr
trans-1,2-Dichloroethene	· ND	mg/kg	C	.20	SW8260B	04/21/05 17:16 / trr
1,2-Dichloropropane	ND	mg/kg	C	.20	SW8260B	04/21/05 17:16 / trr
1,3-Dichloropropane	ND	mg/kg	0	.20	SW8260B	04/21/05 17:16 / trr
2,2-Dichloropropane	ND	mg/kg	· O	.20	SW8260B	04.'21/05 17:16 / trr
1,1-Dichloropropene	ND	mg/kg	0	.20	SW8260B	04'21/05 17:16 / trr
cis-1,3-Dichloropropene	ND	mg/kg	0	.20	SW8260B	04/21/05 17:16 / trr
trans-1,3-Dichloropropene	ND	mg/kg	0	.20	SW8260B	04'21/05 17:16 / trr
Ethylbenzene	ND	mg/kg	0	20	SW8260B	04'21/05 17:16 / trr
Methyl tert-butyl ether (MTBE)	DИ	mg/kg	0	20	SW8260B	94'21/05 17:16 / trr
Methylene chloride	ND	mg/kg	0	20	SW8260B	04/21/05 17:16 / trr
Methyl ethyl ketone	ND	mg/kg	4	.0	SW8260B	04/21/05 17:16 / trr
Styrene	ND	mg/kg	0	20	SW8260B	04 21/05 17:16 / trr
1,1,1,2-Tetrachloroethane	ND	mg/kg	0	20	SW8260B	04/21/05 17:15 / trr
1,1,2,2-Tetrachloroethane	ND	mg/kg	0	20	SW8260B	04:21/05 17:16 / trr
Tetrachloroethene	ND	mg/kg	0.	20	SW8260B	04 21/05 17:16 / trr
Toluene	ND	mg/kg	0.	20	SW8260B	04'21/05 17:16 / trr
1,1,1-Trichloroethane	ND	mg/kg	0.	20	SW8260B	04'21/05 17:16 / trr
1,1,2-Trichloroethane	ND	mg/kg	0.	20	SW8260B	04'21/05 17:16 / trr
Trichloroethene	ND	mg/kg	0.	20	SW8260B	04'21/05 17:16 / trr
Trichlorofluoromethane	. ND	mg/kg	0.	20	SW8260B	04'21/05 17:16 / trr
1,2,3-Trichloropropane	DИ	mg/kg	0.	20	SW8260B	04'21/05 17:16 / trr
Vinyl chloride	ND	mg/kg	0.	20	SW8260B	04/21/05 17:16 / trr
m+p-Xylenes	ND	mg/kg	0.	20	SW8260B	64 21/05 17:16 / trr
o-Xylene	ND	mg/kg	0.	20	SW8260B	04'21/05 17:16 / trr
Surr: p-Bromofluorobenzene	118	%REC		78-160	SW8260B	94 21/05 17:16 / trr
Surr: Dibromofluoromethane	104	%REC		70-132	SW8260B	94°21/05 17:16 / trr
Surr: 1,2-Dichloroethane-d4	104	%REC		60-136	SW8260B	04/21/05 17:16 / trr
Surr: Toluene-d8	104	%REC		75-138		64'21/05 17:16 / trr
SEMI-VOLATILE ORGANIC COMPOU		045		10	CIMIONNO	
Acenaphthene	ND	mg/kg	0.3		SW8270C	04/21/05 14:39 / sm
Acenaphthylene	ND	mg/kg	0.3		SW8270C	54 21/05 14:39 / sm
Anthracene	ND	mg/kg	0.0		SW8270C	54 21/05 14:39 / sm
Benzola)anthracene	ND	mg/kg	0.3	3	SW8270C	54'21/05 14:39 / sm

Report

-RL - Analyte reporting limit.

Definitions:

QCL - Quality control limit.

MCL - Maximum contaminant level.



Client: MT DEQ

Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04/14/05 14:44

Lab ID: H05040130-005

Date Received: 04/14/05

Client Sample ID: ASP05-C9

Matrix: Solid

					MCL/		•
Analyses	Result	Units	Qual	RL	QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COM	IPOUNDS .						
Benzo(a)pyrene	DN	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Benzo(b)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Benzo(g,h,i)perylene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Benzo(k)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Chrysene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Dibenzo(a,h)anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Fluorene	, ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Indeno(1,2,3-cd)pyrene	ND	mg/kg		0.33		SW8270C	04.'21/05 14:39 / sm
Naphthalene	, ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Phenanthrene	ND	mg/kg		0.33		SW8270C	04/21/05 14:39 / sm
Pyrene	ND	mg/kg		0.33		SW8270C	04.21/05 14:39 / sm
Surr: 2-Fluorobiphenyl	88.6	%REC			30-115	SW8270C	04/21/05 14:39 / sm
Surr: Nitrobenzene-d5	86.9	%REC			23-120	SW8270C	04.21/05 14:39 / sm
Surr: Terphenyi-d14	98.9	%REC			18-137	SW8270C	04/21/05 14:39 / sm
POLYCHLORINATED BIPHENYL	S (PCB'S)						
Aroclor 1016	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1221	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1232	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1242	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1248	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1254	ND	mg/kg		0.017		SW8082	C4.'24/05 03:40 / law
Aroclor 1260	, ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1262	ND.	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Aroclor 1268	ND	mg/kg		0.017		SW8082	04/24/05 03:40 / law
Surr: Decachlorobiphenyl	140	%REC	s	'	50-126	SW8082	04/24/05 03:40 / law
Surr: Tetrachloro-m-xylene	108	%REC			42-115	SW8082	C4 24/05 03:40 / law
Sample extract received a Sulfuric Acid C			ulfur Clean-up	(EPA Meth	nod 3660) p		· · · · · · · · · · · · · · · · ·

Report Definitions: RL - Analyte reporting limit.

QCL - Quality control limit.

S - Spike recovery outside of advisory limits.

MCL - Maximum contaminant level.



Client: MT DEQ

Project: ASARCO Slag Pile

Lab ID: H05040130-006

Client Sample ID: ASP06-D16

Report Date: 05/02/05

Collection Date: 04'14/05 14:50

Date Received: 04 14/05

Matrix: Solid

				MCL	•	•
Analyses	Result	Units	Qual	RL QCL	Method	Analysis Date / By
METALS, TOTAL						
Antimony	42.5	mg/kg		5.0	SW6020	04/27/05 01:51 / rlh
Arsenic	130	mg/kg	•	5.0	SW6020	04/27/05 01:51 / rlh
Beryllium	ND	mg/kg		5.0	SW6010B	04:22/05 04:17 / jjw
Cadmium	2.2	mg/kg		1.0	SW6010B	04/20/05 19:46 / jjw
Chromium	68.4	mg/kg		5.0	SW6010B	04.'20/05 19:46 / jjw
Cobalt	173	mg/kg		5.0	SW6010B	04/20/05 19:46 / jjw
Iron .	305000	mg/kg	D	80	SW6010B	04:22/05 04:17 / jjw
Lead	55.5	mg/kg	:	5.0	SW6010B	04/20/05 19:46 / jjw
Manganese	11800	mg/kg	-	5.0	SW6010B	04/22/05 04:17 / jjw
Mercury	. ND	mg/kg		1.0	SW7471A	04/25/05 14:06 / KC
Nickel	18.8	mg/kg		5.0	SW6020	04/27/05 01:51 / rlh
Phosphorus	647	mg/kg		10	SW6010B	04.'22/05 04:17 / jjw
Selenium	11.0	mg/kg		5.0	SW6020	04/27/05 01:51 / rlh
Zinc	19100	mg/kg		5.0	SW6010B	04'22/05 04:17 / jjw

Report

RL - Analyte reporting limit.

Definitions:

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.



Client: MT DEQ

Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04/14/05 14:57

Lab ID: H05040130-007

Date Received: 04/14/05

Client Sample ID: ASP07-F3

Matrix: Solid

				MCL/		
Analyses	Result	Units	Qual	RL QCL	Method	Aualysis Date / By
METALS, TOTAL				•		•
Antimony	42.7	mg/kg		5.0	SW6020	04/27/05 01:58 / rlh
Arsenic	102	mg/kg		5.0	SW6020	04/27/05 01:58 / rlh
Beryllium	ND	mg/kg		5.0	SW6010B	04/22/05 04:20 / jjw
Cadmium .	1.9	mg/kg		1.0	SW6010B	04/20/05 19:49 / jjw
Chromium .	70.5	mg/kg.		5.0	SW6010B	04.'20/05 19:49 / jjw
Cobalt	171	mg/kg		5.0	SW6010B	04/20/05 19:49 / jjw
iron	286000	mg/kg	D.	80	SW6010B	04/22/05 04:20 / jjw
Lead	45.3	mg/kg		5.0	SW6010B	04/20/05 19:49 / jjw
Manganese	12100	mg/kg		5.0	SW6010B	04/22/05 04:20 / jjw
Mercury	ND	mg/kg		1.0	SW7471A	04/25/05 14:10 / KC
Nickel	17.4	mg/kg		5.0	SW6020	04/27/05 01:58 / rlh
Phosphorus	578	mg/kg		10	SW6010B	04/22/05 04:20 / jjw
Selenium	13.8	mg/kg		5.0	SW6020	04/27/05 01:58 / rlh
Zinc	19100	mg/kg		5.0	SW6010B	04:/22/05 04:20 / jjw

Report Definitions: RL - Analyte reporting limit.

QCL - Quality control limit.

MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

D - RL increased due to sample matrix interference.



Client: MT DEQ

Project: ASARCO Slag Pile

Lab ID: H05040130-008

Client Sample ID: ASP08-G2

Report Date: 05/02/05

Collection Date: 04/14/05 15:04

Date Received: 04/14/05

Matrix: Solid

				MCL/		
Analyses	Result	Units	Qual	RL QCL	Method	Analysis Date / B
PHYSICAL CHARACTERISTICS						
Moisture	0.800	wt%		0.0100	SW3550A	04/22/05 08:15 / MO
CHEMICAL CHARACTERISTICS						
pH, 1:2	9.2	s.u.		0.1	ASA10-3	04/25/05 16:18 / sm
Chloride, 1:2	1.06	mg/kg		1.00	ASA10-3	04/26/05 12:48 / qe
METALS, TOTAL						
Antimony	43.8	mg/kg		5.0	SW6020	04/27/05 02:05 / rlh
Arsenic	119	mg/kg		5.0	SW6020	04/27/05 02:05 / rlh
Beryllium	ND	mg/kg		5.0	SW6010B	04/22/05 04:24 / jjw
Cadmium	2.5	mg/kg		1.0	SW6010B	04/20/05 20:00 / jjw
Chromîum	59.8	mg/kg		5.0	SW6010B	04/20/05 20:00 / jjw
Cobalt	194	mg/kg		5.0	SW6010B	04/20/05 20:00 / jjw
Iron	290000	mg/kg	D	80	SW6010B	04/22/05 04:24 / jjw
Lead	118	mg/kg		5.0	SW6010B	04/20/05 20:00 / jjw
Manganese	13100	mg/kg		5.0	SW6010B	04/22/05 04:24 / jjw
Mercury	ND	mg/kg		1.0	SW7471A	04/25/05 14:12 / KC
Nickel	17.9	mg/kg		5.0	SW6020	04/27/05 02:05 / rlh
Phosphorus	720	mg/kg		10	SW6010B	04/22/05 04:24 / jjw
Selenium	9.9	mg/kg		5.0	SW6020	04/27/05 02:05 / rlh
Zinc	21100	mg/kg		5.0	SW6010B	04/22/05 04:24 / jjw
OLATILE ORGANIC COMPOUNDS						. •
Bromoform	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
Benzene	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
Bromobenzene	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
Bromochloromethane	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / tm
Bromodichloromethane	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
Bromomethane	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
Carbon tetrachloride	ND	rng/kg		0.20	SW8260B	04/21/05 17:51 / trr
Chlorobenzene	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
Chloroethane	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
-Chloroethyl vinyl ether	ND	mg/kg		0.20	SW8260B	94/21/05 17:51 / trr
Chloroform	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
Chloromethane	ND	mg/kg		G.20 ·	SW8260B	04/21/05 17:51 / trr
-Chlorotoluene	ND	mg/kg		0.20	SW3260B	04/21/05 17:51 / trr
-Chlorotoluene	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
hlorodibromomethane	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
.2-Dibromoethane	ND	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
Dibromomethane	QN	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr
,2-Dichlorobenzene	NO	mg/kg		0.20	SW8260B	04/21/05 17:51 / trr

Report

RL - Analyte reporting limit.

Definitions: QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.



Client: MT DEQ

Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04/14/05 15:04

Lab ID: H05040130-008

Date Received: 04:14/05

Client Sample ID: ASP08-G2

Matrix: Solid

				MCL		
Analyses	Result	Units	Qual I	ST OCL	Method	Analysis Date / B
VOLATILE ORGANIC COMPOUNDS						
1,3-Dichlorobenzene	ND	mg/kg	o	.20	SW8260B	04/21/05 17:51 / trr
1,4-Dichlorobenzene	ND	mg/kg	O	.20	SW8260B	04/21/05 17:51 / trr
Dichlorodifluoromethane	ND	mg/kg	0	.20	SW3260B	04/21/05 17:51 / trr
1,1-Dichloroethane	ND	mg/kg	0	.20	SW3260B	04/21/05 17:51 / trr
1,2-Dichloroethane	ND	mg/kg	0	.20	SWS260B	04/21/05 17:51 / trr
cis-1,2-Dichloroethene	ND	mg/kg	0	.20	SW8260B	04/21/05 17:51 / tm
1,1-Dichloroethene	ND	mg/kg	0	.20	SW8260B	04/21/05 17:51 / trr
trans-1,2-Dichloroethene	ND	mg/kg	0	20	SW\$260B	04/21/05 17:51 / trr
1,2-Dichloropropane	ND	mg/kg	0	.20	SW8260B	04/21/05 17:51 / trr
1,3-Dichloropropane	ND	mg/kg	0	.20	SW\$260B	04/21/05 17:51 / tm
2,2-Dichloropropane	NĐ	mg/kg	0	20	SW8260B	04/21/05 17:51 / trr
1,1-Dichloropropene	ND	mg/kg	0	20	SW8260B	04/21/05 17:51 / trr
cis-1,3-Dichloropropene	ND	mg/kg	0.	20	SW8260B	04/21/05 17:51 / trr
trans-1,3-Dichloropropene	ND	mg/kg	0.	20	SW8250B	04/21/05 17:51 / tm
Ethylbenzene	GИ	mg/kg	0.	20	SW\$260B	04/21/05 17:51 / trr
Metnyl ted-butyl ether (MTBE)	СИ	mg/kg	0.	20	SW3250B	04/21/05 17:51 / trr
Methylene chloride	ND	mg/kg	0.	20	SW8250B	04/21/05 17:51 / trr
Methyl ethyl ketone	СИ	mg/kg	4	.0	SW8260B	04/21/05 17:51 / trr
Styrene	ND	mg/kg	0.	20	SW8260B	04/21/05 17:51 / trr
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.	20	SW8260B	04/21/05 17:51 / trr
1,1,2,2-Tetrachloroethane	В	mg/kg	0.	20	SW3250B	04/21/05 17:51 / trr
Tetrachloroethene	ND	mg/kg	0.	20	SW8260B	04/21/05 17:51 / trr
Toluene	ND	mg/kg	0.	20	SW8250B	C4.'21/05 17:51 / trr
1,1,1-Trichloroethane	DM	mg/kg	0.1		SW8260B	94/21/05 17:51 / trr
1,1,2-Trichloroethane	ND	mg/kg	0.1		SW3260B	04/21/05 17:51 / trr
Trichloroethene	ND	mg/kg	0.3		SW8260B	04/21/05 17:51 / trr
Trichlorofluoromethane	ND	mg/kg	0.3		SW8260B	04/21/05 17:51 / trr
1,2,3-Trichloropropane	ND	mg/kg	0.3		SW8260B	04/21/05 17:51 / trr
Vinyl chloride	ND	mg/kg	0.3	20	SW8260B	04'21/05 17:51 / tm
n+p-Xylenes	ND	mg/kg	0.2	20	SW8260B	04/21/05 17:51 / trr
p-Xylene	ND	mg/kg	0.2		SW3260B	04/21/05 17:51 / trr
Surr: p-Bromofluorobenzene	118	%REC		78-16		C4/21/05 17:51 / trr
Surr Dibromofluoromethane	103	%REC		70-13		04/21/05 17:51 / trr
Surr: 1.2-Dichloroethane-d4	162	%REC		60-13		64/21/05 17:51 / trr
Surr: Toluene-d8	108	%REC			8 SW3260B	54'21/05 17:51 / trr
Sun. Toligene-Go	103	701120		, ,	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1 2 1/33 17.317 (1)
SEMI-VOLATILE ORGANIC COMPOUN						
Acenaphthene	らり	mg/kg	0.3		SW3270C	C4/21/05 15:21 / sm
Acenaphthylene	СИ	mg/kg	0.3	3	SW2270C	04/21/05 15:21 / sm
Anthrasene	ND	mg/kg	0.3	3	SW2270C	54/21/05 15:21 / sm
Benzo(a)anthracene	В	mg/kg	0.3	3	SW2270C	54/21/05 15:21 / sm

Report Definitions: RL - Analyte reporting limit.

QCL - Quality control limit.

MCL - Maximum contaminant level.



Client: MT DEQ

Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04/14/05 15:04

Lab ID: H05040130-008

Date Received: 04'14/05

Client Sample ID: ASP08-G2

Matrix: Solid

					MCL/		
Analyses	Result	Units	Qual	RL	QCL	Method	Analysis Date / B
SEMI-VOLATILE ORGANIC COM	IPOUNDS						
Benzo(a)pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Benzo(b)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Benzo(g,h,i)perylene	ND	mg/kg		0.33		SW8270C	04:21/05 15:21 / sm
Benzo(k)fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Chrysene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Dibenzo(a,h)anthracene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Fluoranthene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Fluorene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Indeno(1,2,3-cd)pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Naphthalene	. ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Phenanthrene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Pyrene	ND	mg/kg		0.33		SW8270C	04/21/05 15:21 / sm
Surr: 2-Fluorobiphenyl	75.9	%REC			30-115	SW8270C	04/21/05 15:21 / sm
Surr: Nitrobenzene-d5	76.0	%REC			23-120	SW8270C	04/21/05 15:21 / sm
Surr: Terphenyl-d14	88.9	%REC			18-137	SW8270C	04'21/05 15:21 / sm
POLYCHLORINATED BIPHENYL	S (PCB'S)						
Aroclor 1016	ND	mg/kg		0.017		SW8082	04'24/05 04:08 / law
Aroclor 1221	ND	mg/kg		0.017		SW8082	C4:24/05 04:08 / law
Aroclor 1232	ND	mg/kg		0.017		SW8082	04'24/05 04:08 / law
Aroclor 1242	ND	mg/kg		0.017		SW8082	04'24/05 04:08 / law
Aroclor 1248	ND	mg/kg		0.017		SW8082	04/24/05 04:08 / law
Aroclor 1254	ND	mg/kg		0.017		SW8082	04'24/05 04:08 / law
Aroclor 1250	, ND	mg/kg		0.017		SW8082	64 24/05 04:08 / law
Aroclor 1262	ND	mg/kg		0.017		SW8082	04.24/05 04:08 / law
kroclor 1268	ND	mg/kg	-	0.017		SW8082	C4:24/05 04:08 / law
Surr: Decachlorobiphenyl	125	%REC			50-126	SW8082	04/24/05 04:08 / law
Surr: Tetrachloro-m-xylene	90.0	%REC			42-115	SW8082	04 24/05 04:08 / law
Sample extract received a Sulfuric Acid C	lean-up (EPA Method 3	(665) and a Si	ılfur Clean-up (E	PA Meth	od 3650) o	rior to analysis.	



Client: MT DEQ

Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04/14/05 15:07

Lab ID: H05040130-009

Date Received: 04/14/05

Client Sample ID: ASP09-G4

Matrix: Solid

				MCL/		
Analyses	Result	Units	Qual	RL QCL	Method	Analysis Date / By
METALS, TOTAL						
Antimony	57.6	mg/kg		5.0	SW6020	04/27/05 02:12 / rlh
Arsenic	109	mg/kg	•	5.0	SW6020	04/27/05 02:12 / rlh
Beryllium	. ND	mg/kg		5.0	SW6010B	04/22/05 04:27 / jjw
Cadmium	1.4	mg/kg		1.0	SW6010B	04/20/05 20:04 / jjw
Chromium	90.0	mg/kg		5.0	SW6010B	04/20/05 20:04 / jjw
Cobalt	204	mg/kg		5.0	SW6010B	04/20/05 20:04 / jjw
Iron .	294000	mg/kg	D	80	SW6010B	04/22/05 04:27 / jjw
Lead	64.0	mg/kg		5.0	SW6010B	04/20/05 20:04 / jjw
Manganese	11900	mg/kg .		5.0	SW6010B	04/22/05 04:27 / jjw
Mercury	ND	mg/kg		1.0	SW7471A	04/25/05 14:14 / KC
Nickel	20.6	mg/kg		5.0	SW6020	04/27/05 02:12 / rlh
Phosphorus	562	mg/kg		10	SW6010B	04/22/05 04:27 / jjw
Selenium	12.2	mg/kg		5.0	SW6020	04/27/05 02:12 / rlh
Zinc	20100	mg/kg		5.0	SW6010B	04'22/05 04:27 / jiw



Client: MT DEQ

Report Date: 05/02/05

Project: ASARCO Slag Pile

Collection Date: 04/14/05 15:15

Lab ID: H05040130-010

Date Received: 04/14/05

Client Sample ID: ASP10-H16

Matrix: Solid

				MC	CL/	
Analyses	Result	Units	Qual	RL QC	L Method	Analysis Date / By
METALS, TOTAL	•.					•
Antimony	34.1	mg/kg		5.0	SW6020	04/22/05 05:23 / rlh
Arsenic	117	mg/kg		5.0	SW6020	04/22/05 05:23 / rlh
Beryllium	ND	mg/kg	,	5.0	SW6010B	04/22/05 04:31 / jjw
Cadmium	2.1	mg/kg		1.0	SW6010B	04/20/05 20:07 / jjw
Chromium	59.0	mg/kg		5.0	SW6010B	04/20/05 20:07 / jjw
Cobalt	137	mg/kg		5.0	SW6010B	04/20/05 20:07 / jjw
Iron ·	305000	mg/kg	D	80	SW6010B	04/22/05 04:31 / jjw
Lead	103	mg/kg		5.0	SW6010B	04/20/05 20:07 / jjw
Manganese	10400	mg/kg	•	5.0	SW6010B	04/22/05 04:31 / jjw
Mercury	ND	mg/kg		1.0	SW7471A	04/25/05 14:16 / KC
Nickel	14.7	mg/kg		5.0	SW6020	04.22/05 05:23 / rlh
Phosphorus .	710	mg/kg		10	SW6010B	04/22/05 04:31 / jjw
Selenium	9.1	mg/kg		5.0	SW6020	04.'22/05 05:23 / rlh
Zinc	22200	mg/kg		5.0	SW50105	04/22/05 04:31 / jjw

Report Definitions: RL - Analyte reporting limit.

QCL - Quality control limit.

D - RL increased due to sample matrix interference.

MCL - Maximum contaminant level.

APPENDIX 4-1-2

SUMMARY OF SLAG TESTING ANALYSES INCLUDING TEST BASIN WATER QUALITY, SLAG BOTTLE ROLL TESTS AND EP TOXICITY TESTS

SITE NAME SAMPLE LETE LAP REMARKS	FUMED SLAG 12/30/84 ASARCO ROTTLE	FUMED SLAG 04/02/87 ASARCO	FUMED SLAG <u>*04/22/67</u> ASARCO	FUMED SLAG 04/22/87 CHMTC SPLIT	FUMED SLAG 05/22/67 ASARCO REPLICATE	FUMED SLAC 05/22/97 ASARCO	FUMED SLAG <u>05/22/87</u> CHMTC SFLIT	FUMED SLAG <u>(5/22/87</u> CHMTC REPLICATE	FUMED SLAG <u>07/15/87</u> ASARCO FIEFILICATE	FUMED SLAG 07/15/87 ASARCO
remarks Sanfile Number	ROLL TEST *	8704-1	8704-20		8705-50	8705-47			8707-02	8707-01
FHYSICAL FARAMETERS WATER TEMPERATURE (C) SPEC. COND. (UMHOS/CM) FIELD			7.5 2235	ej i	2268	9.7 2265			2137	2150
SFEC. COND. (LMHOS/CH) LAR	115	1950				2320	·			2400
FH FIELD	***	1750	4.16 ×		7.48	7.69				7.46
FH LAN	9.9	7.77		₩.		7.52	•			7,55
TDS MEAS. @ 180 DEC. C	94	1842	1903 *	**		2086	2227			1912 *
OXYCEN (D) DISS	• •	10.2	4.3	,,,		4.3				4.1
DEPTH TO SUL BELOW MP (FT)			8.74 ×			8.01				-
COMMON IONS										
CALCIUM (CA)	12	510	454	449.0		422	417.0	412.0		321
MAGNESIUM (MG)	O . 49	20	25.5	27.40		20.2	25.10	24,90		22.9
SQUIUM (NA)	5.1	74	71.5	76.6		85	72.5	71.8		74
FOTASSIUM (K)	3.9	54	45	60.B0		74	134.00	122.00		68
BICARBONATE (HCO3) (LAB)	(1.0	260 ★	192			ŶB				84
CARPONATE AS CO3 (LAP)	19	(1	<1			(1				(1.0
SULFATE (SO4)	10	1450	1425	1240.0		1338	1304.0			1200
CHLORIDE (CL)	18	Ý.0	7.0	10.0	•	7.0	30.0			4.0
TO SE										
TRACE_ELEMENTS										
ARSENIC (AS) DISS	0.19	0.0325	0.0283	0.0198	0.038	0.030	. 0.0530	0.0320	0.057	0.039 *
ARSENIC (AS) +3			0.014						0.0214	0.060 *
ARSENIC (AS) +5			0.010						0.0722 *	0.0268
CADMIUM (CD) DISS	0.003	0.075	0.050	0.0720	0.051	0.051	0.0520	0.0500	0.055	0.049
COFFER (CU) DISS	600.0	0.280 *	0.193	0.2260	0.125	0.128	0.1480	0.1340	0.118	0.110
IRON (FE) DISS	0.11	(0,020	(0.020	(0.105	0.044	0.045	(0.100	(0.100	(0.020	(0.020
IFON (FE II)	•		0.010						0.040	0.080
LEAD (FR) DIES	(0,017	0.045 *	0.030		0.019	0.020	0,0323	0.0432	0.016	0.021
MANCAHESE (MN) DISS	(0.017	1.090	1.440	2.640	1.910	1.930	2.660	2.640	2.930	2.890
ZINC (ZN) DISS	0.023	3.580	3.700	4.450	2.830	2.890	2.840	2.820	2.500	2.300

SITE NAME	FUMED SLAG	FUMED SLAG	UNFLMED SLAG	unfumed Slas	Unfumed Slag	UNFUMED SLAG	UNFUMED SLAC	UNFUMED SLAG	UNFUMED SLAG
SAMFLE_DATE	09/22/87	09/22/97	12/30/84	04/22/87	24/22/87	05/22/67	05/22/67	07/15/87	<u> </u>
LAR	ASARCO	ASAF:CO	ASARCO	ASAF:CO	CHMTC	CHMTC	CORACA	O3?A&A	ASARCO
REMARKS	REFLICATE	•	ROTTLE		SFLIT	SFLIT			
REMARKS			ROLL TEST					•	
SAMPLE NUMBER	8709-04	8709-04		8704-24		-	8705-49	8707-03	8709-07
FHYSICAL PARAMETERS									
WATER TEMPERATURE (C)		15 ×		10.5			10.9		17 #
SPEC. COND. (UMHOS/CM) FIELD	1348	1344		14296 ¥			19978	19850	
SFEC. COND. (UMHOS/CM) LAW		. 1350	500	14500			20200	22000	12200
FH FIELD				9.49			9.97 #	9.48	
FH LAB		7.43	10.4	9.25			9.5	9.73	9.69
TOS MEAS. @ 160 DEC. C		1114	509	14183 *	7298	18720	18523	18172 *	10784
OXYGEN (O) DISS		4.0		4.5			3.2	3.0	4.1
DEPTH TO SWL RELOW MP (FT)		7.74		8.83			7.85		7.02
COMMON TONS									
CALCIUM (CA)		124.5	17	371	437.0		361	426	345
MAGNESIUM (MG)		11.	0.22	8.5	5.76		4.7	6.4	4.2
(AA) MUIGOS		45	19	2900	2960.0		3890	3900	2200
FOTASSIUM (K)		45	22	1950	158.00		2450	2550	1540
ALKALINITY AS CACO3 (LAR)							587		
RICARRONATE (HCO3) (LAR)		72	(1.0	48.¢ ¥			(1	(1.0	(1.9
CARRONATE AS CO3 (LAR)		(1.0	3 	(1		•	2B4	163	197
HIDEGXIDE (OH)							38	44	30
SULFATE (504)		480 #		920-0	2480.0	2463.0	1200	11750	6750
CHLORIDE (CL)		3.0	IŸ	57	63.0	75.0	65	74	.35
TRACE_ELEMENTS									
ARSENIC (AS) DISS	0.075 *	0.054 *	0.31	0.620	0.5130		0.353	0.590 *	0.553
ARSENIC (AS) +3				0.400				0.550	
ARSENIC (AS) +5				0.030				0.054	
CADMIUM (CD) DISS	0.021	0.021	0.003	0.030 W	6,0043		0.003	0.005	0.003
COFFER (CU) DISS	0.055	0.054	0.008	0.130	0.1190		0.128	0.085	0.043
IRON (FE) DISS	(0.020	(0.030	0.070	0.150	(0.100		0.225 ₩	(0.020	(0.020
IRON (FE 11)	0.02	(0.01		10.010				0.070	(0.01
LEAD (FR) PISS	0.023	0.02%	0.083	0.098	0.1430		0.0505	0.021 *	
MANCANESE (MN) DISS	1.590	1.540	(0.917	0.155	0.139		9.083	0.090	0.050
ZINC (ZN) DISS	0.813	0.788	0.053	0.100	0.090		0.048	0.030	0.023
								•	

TABLE 1 East Helena

SLAG SAMPLE LEACHATE ANALYSIS

979	•									
SARCO	•				(PPM i	n Leach	ate)			
ab No.	Description	AB	Ba	Cd	Cr.	Pb	Hg	Se	PA	(2n)
3278	Slag 1 3	.018	.3	.08	<.01	.6	<.001	<.005	<.01	3.5
3279	Slag 2	<.014	.1	.13	<.01	<.1	<.001	<,005	<.01	2.6
3280	Slag 3 ②	.020	. ,1	.03	<,01	3.4	<.001	<.005	<.01	2,1
3281	slag 4 (7.)	<.014	. 2	<.01	<.01	<.1	<.001	<.005	<.01	1.0
3282	Slag 5	.032	.2	<.01	<.01	3.3	<.001	<.005	<.01 ·	5.0
),	Slag 6	<,014	,1	.15	<.01	1.0	<.001	<.005	<.01	6.0
aximum (sels for the sels of the sell of the sels of the selection of the sels of the sel		0.5	10.0	0.1	0.5	0.5	.02	0.1	0.5	***

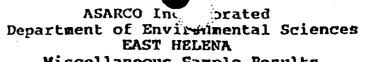
Currently unspecified but estimated to be 50 ppm (10 times the Drinking Water Standard).

_. Ks

ASARCO In orated Department of Environmental Sciences EAST HELENA

Miscellaneous Sample Results

ΛSARCO LAB #	SAMPLE DESCRIPTION	1985 Sample Date	b bш уа	Cd Cd	Pb ppm	
3658 Air Cooled	Blast Furnace Slag Blast Purnace Slag	5/ 7 5/ 7	.12	.002 <.002	5.3 .050	



Miscellaneous Sample Results

⊼SARCO LAB ≢	SAMPLE DI	escription -	1985 Sample Date	Дрш	As ppm	Ba ppm	Cd ppm	Cr ppm
7860 TCLP-F 7861 TCLP-U	umed Blast Funfumed Blast Fu	urnace Slag urnace Slag	10/21 10/21	<.002 <.002	.45 1.2	4.6 1.6	.007 .25	.01
ASARCO LAB #	SAMPLE DI	escription -	1985 SAMPLE DATE	Hg ppb	Pb ppm	Se ppm		
7860 TCLP-Y 7861 TCLP-U	umed Blast Fi	urnace Slag urnace Slag	10/21 10/21	<.005 <.001	10.	.004		. :

ASARCO Incorporated Department of Environmental Sciences EAST HELENA Miscellaneous Sample Results

ASARCO LAB #	SAMPLE DESCRIPTION	1985 Sample Date	Ag ppm	ppm As	Ва рр и	Cd .	Cr ppm
6378 6379	Air Cooled Slag Granulated Slag	8/15 8/15	<.005 <.005	.012	<1.0 <1.0	.002 <.002	<.17 <.17
ASARCO LAB ‡	SAMPLE DESCRIPTION	1985 SAMPLE DATE	Hg ppb	Pb ppm	Se ppm	ън	
6378 6379	Air Cooled Slag Granulated Slag	8/15 8/15	<.50	1.1	<.080 <.080	9.2 8.0	· · · · · · · · · · · · · · · · · · ·

ASARCO Incorporated Department of Environmental Sciences EAST HELENA Miscellaneous Sample Results

ASARCO LAB	SAMPLE DESCRIPTION	1983 Sample Date	Pb ppm	Cd ppm	Cr ppm	Ag ppm	Ba ppm
11370 2-4 mo 11371 1 week		11/28 11/28	9.8 3.9	(3.9 ⁾ <.004	<.030 <.030	<.008 <.008	7.2 8.7
ASARCO LAB	SAMPLE DESCRIPTION	1983 Sample Date) As	Se ppm	ppb нд	рН	
11370 2-4 mc 11371 1 week		11/28 11/23	.20 .35	.012 <.004	<.50 <.50	10. 10.	

	pp=							
Ba	Pb	cq	Cr	λq	\$e	Hg	X.	
Maximum allowable levels of contaminants						 .		
in the leachate of a non-toxic meterial100.	5.0	1.0	5.0	5.0	1.0	.2	5.0	

storage area. The sediments are being stored in a protected environment to prevent contamination of the adjacent area from dispersion of the sediments by wind and water. The sediments are located on a concrete pad to prevent contact with adjacent soils. A containment berm around the perimeter of the sediment pile diverts run-on. A geomembrane cover over the sediments prevents wind and water dispersion and eliminates subsequent generation of leachate.

Approximately 31,000 cubic yards of dewatered sediments were transported to the Lower Ore Storage Area. Four thousand cubic yards of these sediments were smelted prior to the stockpile being covered with a geomembrane liner in October 1997. The sediments will remain in this interim storage facility while EPA considers Asarco's request to modify the sediment smelting requirement of the ROD, and instead dispose of these materials in the on-site CAMU.

4.1.4 Slag

The effect of the slag pile on groundwater and surface water was evaluated as part of the 1990 Comprehensive RI/FS. The evaluation was conducted in accordance with procedures presented in the Comprehensive RI/FS Work Plan (Hydrometrics 1987). Based on the results of the evaluation, the RI/FS concluded that the potential for impacts to groundwater and surface water from slag is low and the subsequent ROD did not specify any remedial action for the Slag Pile Operable Unit. Post-RI/FS monitoring at adjacent surface water and groundwater monitoring sites is on-going. A summary of the slag investigation and the findings of the RI relative to slag are presented below.

4.1.4.1 Investigation of Potential Groundwater Impacts

Slag Infiltration Test Basin Construction, Water Level Measurement, Water Quality Sampling and Analysis

Infiltration and percolation of precipitation into the slag pile were directly measured in slag test basins constructed in fumed and unfumed slag. Fumed slag is a by-product of the zinc

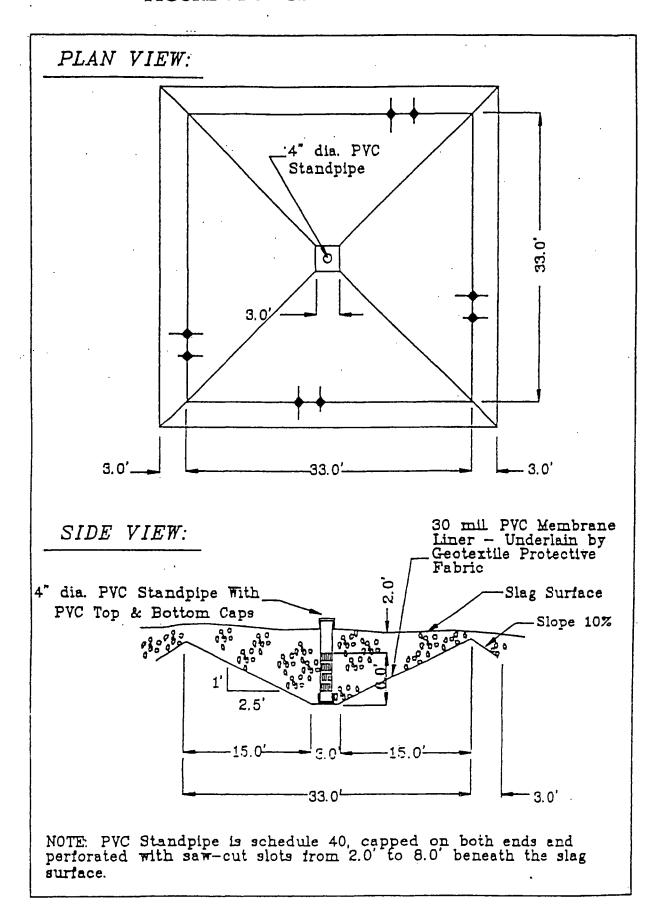
Unfumed slag is a by-product of the blast furnace which has not been further processed through the zinc recovery process. The zinc recovery process was suspended in 1982 and zinc is no longer recovered from the slag. Since 1982, unfumed slag has been placed in an area segregated from furned slag.

Two slag infiltration catchment basins were constructed; one in a typical location in the fumed slag, and one in a typical location in unfumed slag. Construction of the test basins included removal of a 2 to 3 meter layer of slag, placement of an impervious 36-mil reinforced Hypalon liner in the excavation, installation of a collection sump, and replacement of the slag. Figure 4-1-8 shows the slag test basin design.

Water elevations in the collection sumps were measured periodically, and after rainfall or snowmelt events to determine the actual accumulation of water in the slag basins. Collected water was pumped from the sump, sent to the TSC laboratory, and tested for the parameters listed in Table 3-2-2. Analytical results of water collected in the test basins are summarized in Appendix 4-1-2.

Slag Material Sampling and Analysis

To supplement slag information collected from the test basins, samples of slag were collected from the test basin sites and sent to the TSC lab for "bottle roll" tests. Estimates of slag leachability were obtained by conducting "bottle roll" test on slag samples. Bottle roll tests involved placing samples of slag in bottles in the laboratory, adding deionized water, agitating the bottles for approximately 24 hours, then analyzing the water for concentrations of arsenic and metals. Details of the bottle roll extraction tests are in the Quality Assurance Project Plan (QAPP) Addendum to the Phase II Water Resources Investigation Work Plan (Hydrometries, 1986). Bottle roll test results are in Appendix 4-1-2.



In addition to the slag sampling and bottle roll test performed as part of the East Helena RI activities, additional slag samples were collected and analyzed using the EP toxicity procedure. Results of these analyses are also in Appendix 4-1-2.

Assessment of Groundwater Impacts

In an effort to estimate infiltration rates, the volume of water retained in the slag test basins was calculated for 13 time intervals, beginning December 23, 1986 and ending February 10, 1988. These volumes were compared to the volumes of precipitation during the same periods and converted to percentages, as summarized in Table 4-1-10. The percentage of precipitation retained in the basins varied from -6.7% to 61.9% in the funed slag, and -45% to 61.8% in the unfumed slag (negative percentages indicate evaporation rates exceed precipitation collected in the test basins). Although there is a relationship of test basin water level fluctuations to precipitation (see Figures 4-1-9 and 4-1-10), the relationship may be complicated by variable evaporation, hence, infiltration rates are variable.

Concentrations of arsenic and metals from test basin water samples (see Appendix 4-1-2) were low compared to plant area groundwater. Dissolved arsenic varied from 0.0198 mg/l to 0.075 mg/l in the fumed slag, and 0.353 to 0.590 mg/l in the unfumed slag during the study period. Dissolved cadmium varied from 0.003 to 0.075 mg/l in the fumed slag, and 0.003 to 0.0063 mg/l in the unfumed slag. Dissolved lead varied from 0.016 to 0.045 mg/l in the fumed slag, and 0.021 to 0.098 mg/l in the unfumed slag.

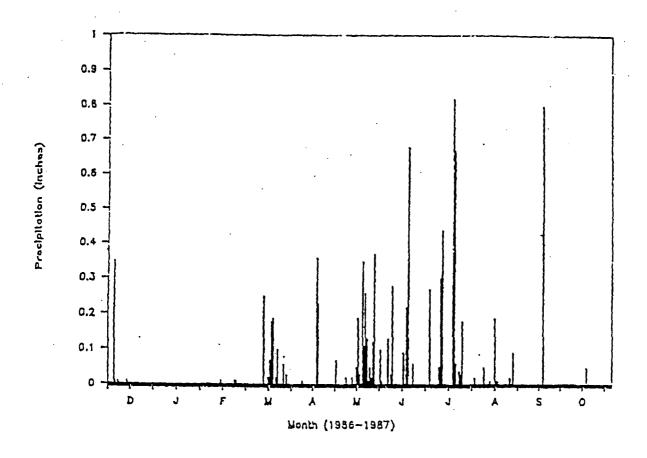
The concentrations of arsenic and metals from bottle roll testing (See Appendix 4-1-2) were similar to the slag test basin water quality. For the fumed slag, dissolved arsenic was 0.19 mg/l, cadmium was 0.003 mg/l, and lead was less than 0.017 mg/l. For the unfumed slag, dissolved arsenic was 0.31 mg/l, cadmium was 0.003 mg/l and lead was 0.083 mg/l.

EP toxicity tests (see Appendix 4-1-2) indicate that leachable trace element concentrations from the slag are variable. From 18 tests, the results for arsenic varied from below detection level to 1.2 ppm with an average of 0.16 ppm; cadmium varied from below detection level to

TABLE 4-1-10. PRECIPITATION COLLECTED IN SLAG TEST BASINS

FUMED SLAG					
	Precipitation	Precipitation Retained *	Percent of Precipitation		
Date	(inches)	(Inches)	Retained		
12/23/86					
1/22/86	0				
2/23/87	0				
3/26/87	0.75	0.01	1.4		
4/21/87	0.23	-0.01	-5.8		
5/18/87	0.51	0.32	61.9		
6/18/87	2.46	0.49	19.8		
7/14/87	0.88	0.25	28.7		
8/11/87	1.70	0.36	21.2		
9/11/87	0.37	not calculated			
10/14/87	0.65	0.25	38.4		
12/7/87	0.45	-0.02	-3.9		
1/20/88	0.34	-0.02	-6.7		
2/10/88	0.49	-0.01	-1.1		
UNFUMED SLAG					
12/23/86					
1/22/87	0				
2/23/87	0				
3/26/87	0.75	0			
4/21/87	0.23	0.12	52.7		
5/18/87	0.51	0.27	53.6		
6/18/87	2.46	0.73	29.8		
7/14/87	0.88	0.28	31.7		
8/11/87	1.70	0.12	7.2		
9/11/87	0.37	not calculated			
10/14/87	0.65	0.40	61.8		
12/7/87	0.45	-0.05	-12.1		
1/20/88	0.34	-0.15	-45.0		
2/10/88	0.49	0.14	27.6		

^{*} Value is calculated based on measured water level changes and test basin geometry (Frustum of a general pyramid). Negative values indicate evaporation exceeds infiltration.

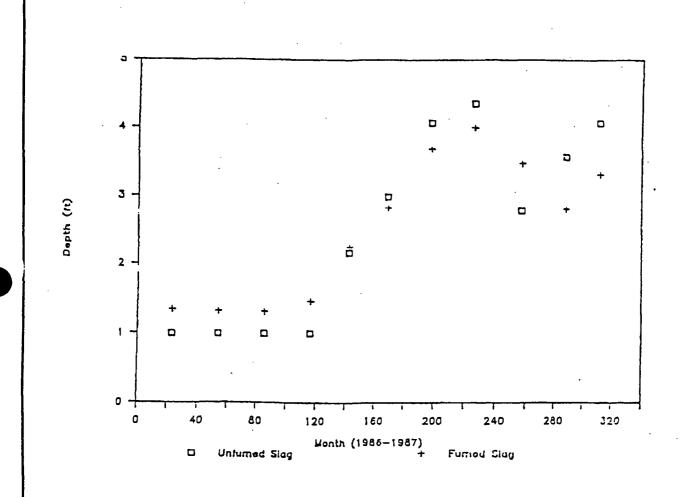


CC/RA REPORT ASARCO EAST HELENA FACILITY

DAILY PRECIPITATION AT HELENA AIRPORT

FIGURE

4-1-9



CC/RA REPORT ASARCO EAST HELENA FACILITY

DEPTH OF WATER IN SLAG TEST BASIN

FIGURE

4-1-10

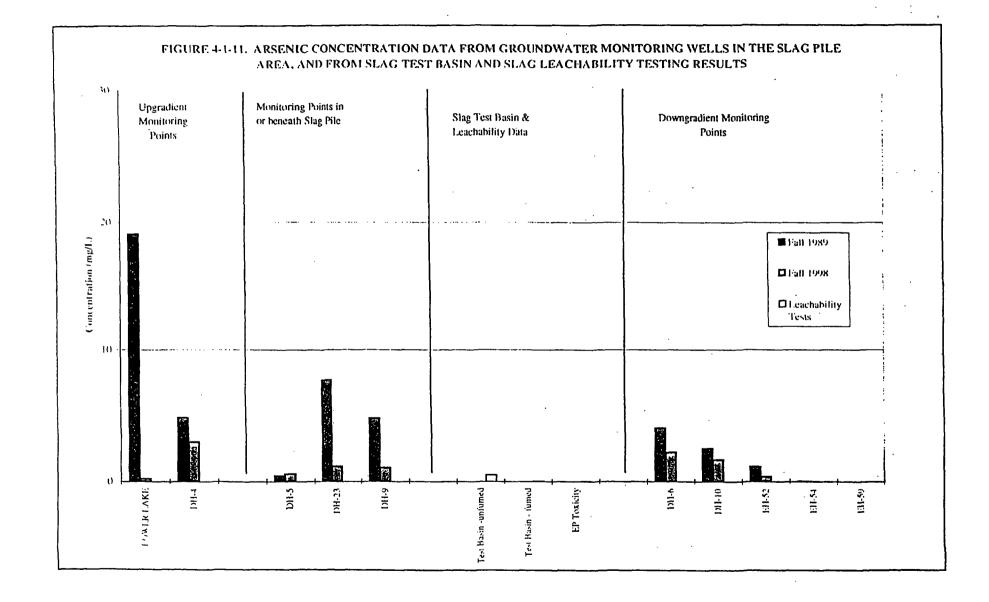
3.9 ppm, with an average of 0.26 ppm (only one cadmium value was greater than 0.25 ppm; if the 3.9 ppm value is dropped, the cadmium average concentration is 0.04 ppm); lead values varied from below detection level to 30 ppm, with an average of 5.2 ppm.

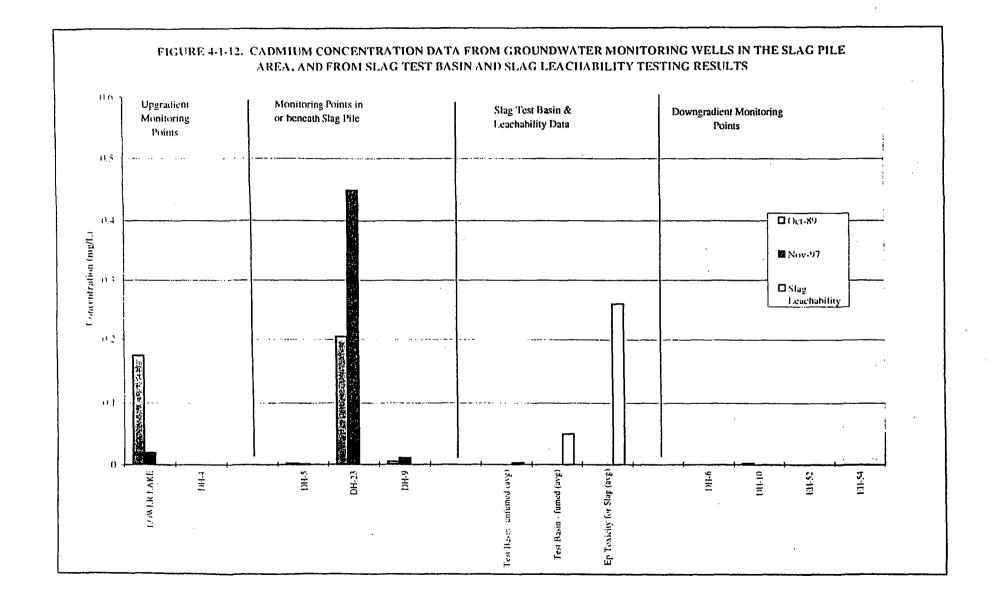
The EP Toxicity tests were not conducted as part of the Comprehensive RI/FS activities, but have been included as supplementary data. The EP Toxicity results tend to overpredict the mobility of metals compared to the other test results and observed site conditions due to the low pH of the extractant. In particular, the values for lead appear to be much higher with TCLP than with natural conditions.

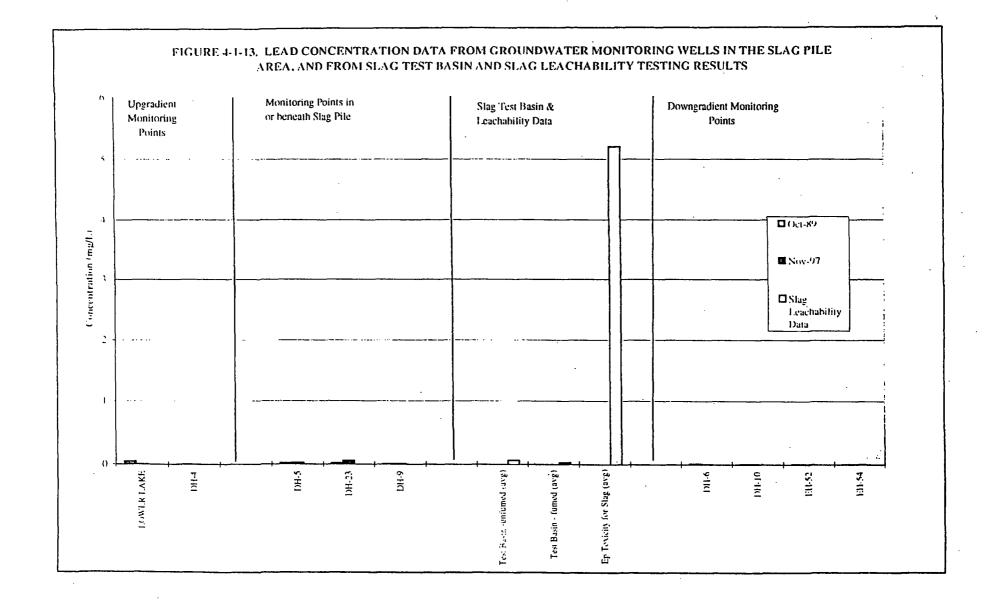
Concentrations of arsenic and other metals in the groundwater system are discussed in detail in Section 4.4. In general, results of water quality from the slag basins and bottle roll analyses of slag indicate arsenic concentrations are significantly lower than concentrations observed in monitoring wells both upgradient and downgradient of the slag pile. Figures 4-1-11, 4-1-12, 4-1-13 and 4-1-14 show a comparison to slag test basin water quality, bottle roll test water quality. EP Tox test results, and groundwater quality upgradient and down gradient of the slag pile.

Based on observed recharge rates in the slag test basins and associated water quality data, the slag pile would account for only 1 to 3 percent of the observed arsenic at downgradient monitoring well DH-10 (see Figure 4-1-15). Concentrations of arsenic in these wells are similar to arsenic concentrations in DH-4 near Lower Lake, the apparent source of elevated arsenic in these wells. Based on the results of test basin water quality analyses and bottle roll te2sts, it is unlikely that slag significantly effects observed arsenic concentration trends on the site.

While EP-Toxicity results indicate that there is some potential for mobility of causium, lead and zinc from slag, the results of the test basins and bottle roll tests indicate metals concentrations released from slag is low. In addition, concentrations of cadmium, lead and







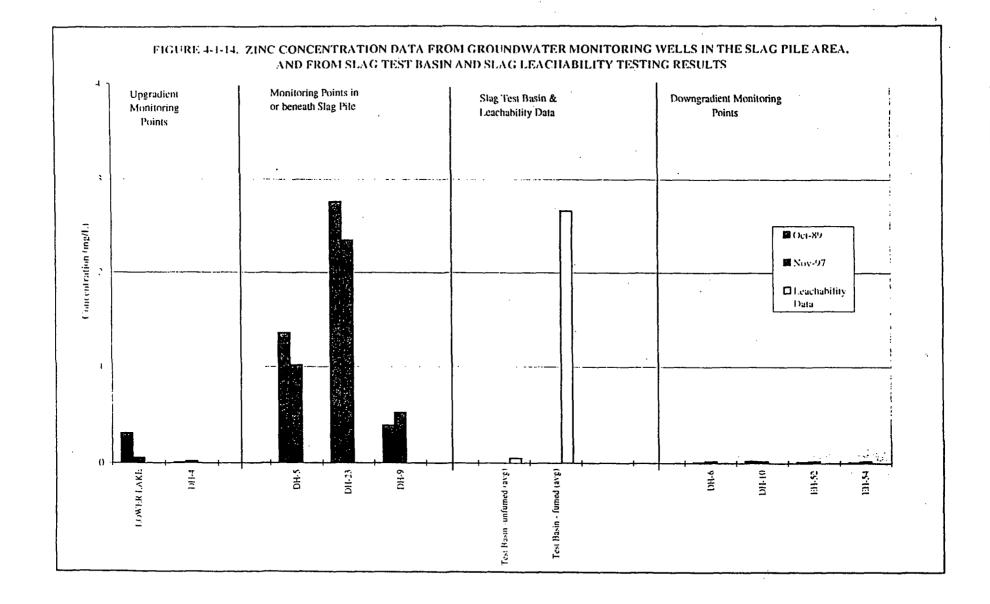


FIGURE 4-1-15. CALCULATED ARSENIC LOADING FROM SLAG VS ARSENIC LOAD IN DOWN-GRADIENT GROUNDWATER

Data Source	Arsenic Conc.(1)	Arsenic Load (2)	% of GW Load (3)
Test Basin Data			
Fumed Slag	0.036 mg/L	0.003 lb/day	0.20%
Unfumed Slag	0.53 mg/L	0.044 lb/day	2.40%
Average	0.28 mg/L	0.022 lb/day	1.30%
Max	0.59 mg/L	0.047 lb/day	2.60%
EP toxicity (avg. of 18 tests)	0.16 mg/L	0.013 lb/day	0.70%
Groundwater Load	2.13 mg/L (4)	1.8 lb/day (4)	

Notes

- (1) Source RI/FS Appendix 6-1
- (2) Slag load calculations assume:

20% infiltration (slag test basin average)

11.3 in/yr ppt

57 acre slag pile area

- (3) Calculations based on 1.8 lb/day GW arsenic load assuming.
 - east side groundwater flux of 70 gpm

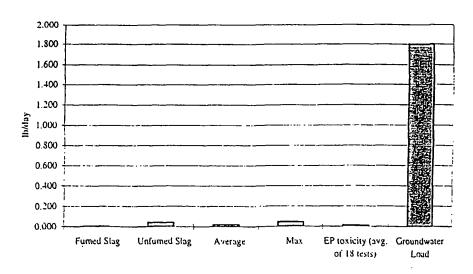
east side groundwater arsenic concentration of 2.13 mg/L

(4) Groundwater Load assumptions

Groundwater As Concetration 2.13 mg/L (avg from DH-10) Groundwater flux = 70 gpm

(K:DATA\PROJECT\0867\WQ.XLS)

Arsenic Load



zinc is also very low. Based on the results of test basin water quality analyses, bottle roll tests, and down gradient groundwater quality, it is unlikely that slag effects observed groundwater quality trends on the site.

Stratigraphic cross-sections showing the slag pile and underlying stratigraphy (Figure 4-1-16) shows the relationship of the slag pile and underlying strata, including the perched alluvial horizon and the underlying coarser grained alluvial aquifer. Based on monitoring well stratigraphy, it is likely the perched horizon at least partially underlies the slag pile. However, there is no evidence of the perched horizon in downgradient wells (see DH-6 and DH-10). As a result, direct impacts from the slag pile at these wells is unlikely since the perched horizon is absent, and the wells are completed in the coarse grained alluvium. However, as noted above, test basin and laboratory test results indicate potential water quality impacts from the slag are low and are not responsible for the water quality concentration observed in downgradient wells.

4.1.4.2 Potential Surface Water Impacts

The potential for runoff transport in the slag pile area is very low due to the coarse, granular nature of the slag pile, which allows extremely rapid infiltration. Even during high precipitation events no runoff has been observed from the slag pile. Similarly seeps from the face of the slag pile have not been observed. The potential for impacts to surface water are, therefore, limited to direct contact and erosion of the slag pile where it forms steep sided banks adjacent to Prickly Pear Creek. Prickly Pear Creek is in immediate contact with the slag pile between PPC-5 and PPC-6, and adjacent to the slag pile from PPC-6 to PPC-7 (see Exhibit 3-2-1).

The 1990 Comprehensive RI/FS (Hydrometrics, 1990a) examined water quality data from Prickly Pear Creek to assess the potential impact of the slag pile on the creek. No consistent concentration or load increases were apparent in Prickly Pear Creek adjacent to the slag pile (between PPC-5 and PPC-7). The RI/FS therefore concluded that the contribution of arsenic and metals to surface water from slag is very minor. RI/FS and Post RI/FS water quality data

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for Prickly Pear Creek are presented and discussed in Section 4.3 of this report and post-RI/FS water quality data are generally consistent with the RI/FS findings. Average metal concentrations show only small differences between stations PPC 5. PPC 7 and PPC 8 (see Figure 4-1-17). Only one high flow stream event (May 1994) shows a pronounced increase in total arsenic load between PPC-5 and PPC-7 (see Figure 4-3-9 in Section 4.3); however, arsenic concentrations decreased from PPC-5 to PPC-7 in the May 1994 event. The calculated load increase is therefore entirely a function of the flow measurement. Since the accuracy of the flow measurements is poor during higher flow events due to increased velocities and turbulence (particularly at PPC-5 below the dam) the apparent load increase during May 1994 is probably the result of flow measurement error. The conclusion of the surface water analysis is that there is little evidence for transport of arsenic and metals from the slag pile with the possible exception being direct erosion of the slag during infrequent high stream flow events.

1.21.2 PROCESS FLUIDS

As part of the Comprehensive RI/FS (Hydrometrics 1990a), the Process Fluids Operable Unit was divided into two sub-units: Process Ponds and Process Fluid Transport Circuits.

1.1.14.2.1 Process Ponds

The Process Ponds include:

- Lower Lake,
- Former Thornock Lake, and
- The acid plant water treatment facility.

As described in Sections 1 and 3, the Process Ponds were addressed by the Process Ponds RI/FS (Hydrometrics, 1989), a subsequent Process Ponds ROD (US EPA, 1989), and several RD/RA documents, and remedial actions that consisted primarily of sediment excavation. The 1989 Process Pond RI consisted of:

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

East Helena

Technical Services (Project 3101)

Batch No: L010790

LAB NO COLLECTED DESCRIPTION	Parametei	VALUE	UNITS	analyst	_analyzed _da	YS HETHOD
						•
	·					
					•	
•		•				
•						
				,		
L010790-002 23-MAY-01 FUMED ASARCO SLAG	AG	0.003	*	MJF	19-JUN-01	ICP
•	AL	2.32	*	MJF	18-JUN-01	ICP
	AS	0.022	•	MJF	18-JUN-01	ICP
	BA	0.34	`	MJF	18-JUN-01	ICP
	BE	<0.02	*	MJF	18-JUN-01	ICP
	CR	0.036	*	MJF	18-JUN-01	ICP
	ເນ	0.32	*	MJF	18-JUN-01	ICP
	liG	2.7	ppm	МО	21-JUN-01	COLD VAPOR AA
	W	1.37	•	MJF	18-JUN-01	ICP
	NI	<0.02	*	MJF	18-JUN-01	ICP
	PB	0.036	•	MJF	18-JUN-01	ICP
	SD	0.026	•	MJF	18-JUN-01	ICP
	SE	<0.02	t	MJF	18-10h-01	ICP
	TL	<0.02	ŧ	MJF	18-JUN-01	ICP
	V	<0.02	¥	MJF	18-JUN-01	ICP
	711					*

Z11

1.63

MJF

18-JUN-01

ICP

ASARCO TECHNICAL SERVICES CENTER

ANALYTICAL DATA REPORT

East Helena

Technical Services (Project 3101)

Batch No: L010791

DATE HOLD LAB NO COLLECTED DESCRIPTION PARAMETER VALUE UNITS ANALYST ANALYZED DAYS	
\cdot	••

L010791-002 23-MAY-01 FUMED ASARCO SLAG (TCLP)

AC <0.050 ESH 08-JUN-01 6010 ppmAS <0.10 ESH 08-JUN-01 6010 ppm BA 1.4 ESH 08-JUN-01 6010 ppm <0.005 BE ESH 08-JUN-01 ppm 6010 CD <0.050 08-JUN-01 ppm ESH 6010 CR <0.10 ESH 08-JUN-01 ppm 6010 HÇ <0.50 ppb 07-JUN-01 7470 NI <0.10 ESH 08-JUN-01 6010 ppm PB 0.23 08-JUN-01 ESH 6010 ppm PH 9.2 MO 05-JUN-01 150.1 pН SE <0.10 ppm **ESH** 08-JUN-01 6010 TL <0.10 ppm ESH 08-JUN-01 6010 08-JUN-01 <0.10 ESH 6010 ppm17 ppm ESH 08-JUN-01 6010

Approved

Reviewer

2007 CLEANING AND DEMOLITION PROJECT ASARCO EAST HELENA PLANT

2007 WORK PLAN

APPENDIX E

EXAMPLE INSPECTION FORM

INTERIM CAP INSPECTION CHECKLIST

B	Area 1	No.	Inspected by:	DATE:		
5		ACTI	ON NEI	EDED		
AREA INSPECTED	ITEM NO.	CONDITION	OBSERVATION	MONITOR	INVESTIGATE	REPAIR
	1	Exposed liner				
SYSTEMS	2	Sand Bags	·			
	3	Liner Seams				
INTERIM LINER	4	Liner/Concrete Attachments	·			
	5	Site Drainage				
Addition	nal Co	mments:		L	<u> </u>	
L						

2007 CLEANING AND DEMOLITION PROJECT ASARCO EAST HELENA PLANT

2007 WORK PLAN

Prepared by:

URS Corporation / Cleveland Wrecking Company 614 East Edna Place Covina, CA 91723

May 18, 2007

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LIST OF ATTACHMENTS

ATTACHMENT A	CONSTRUCTION DOCUMENT DRAWINGS (SEPARATE DOCUMENT SET)
ATTACHMENT B	IRS ENVIRONMENTAL HAZARDOUS MATERIALS ABATEMENT PLAN
ATTACHMENT C	DEMOLITION AREA CAP INFORMATION
ATTACHMENT D	CAMILLINER AND QUALITY CONTROL MANUALS

2007 CLEANING AND DEMOLITION PROJECT ASARCO EAST HELENA PLANT

2007 WORK PLAN

1.0 INTRODUCTION

1.1 Purpose of the Cleaning & Demolition and CAMU Cell Work Plan

URS / Cleveland Wrecking Company (URS/CWC) has prepared this Cleaning & Demolition and Corrective Action Management Unit (CAMU) Work Plan, hereafter referred to as the Work Plan, for the purpose of providing a description of asbestos abatement, environmental cleaning, demolition, and waste handling procedures, as well as CAMU general construction procedures which URS/CWC will be implementing during on-site activities. This Work Plan has been prepared in accordance with the Construction Documents for the "2007 Cleaning & Demolition Project and CAMU Phase 2 Cell Project" of the ASARCO East Helena Plant located at 100 Smelter Road in the City of East Helena, Montana. The procedures described in the Work Plan comply with the Construction Documents and all Federal, State, and local governing regulations.

1.2 Site Location and Description

The ASARCO East Helena facility is a former lead smelter located on approximately 141 acres. The facility is surrounded by agricultural property on the west; Prickly Pear Creek and agricultural property on the east; Montana Highway 12, the American Chemet facility, and residential properties to the north; and Prickly Pear Creek and agricultural property to the south. A site vicinity map is shown Sheet 1 and a site plot plan is shown on Sheet 2 of the Construction Document Drawings, which are included as Attachment A.

The abatement, environmental cleaning, and demolition activities at the site have been broken into several areas: Stage 1, Stage 2, Alternate A, and Alternate B. Stage 1 and Stage 2 have been labeled as Phase IV demolition activities, with Phases I, II, and III being previously completed. Alternates A and B will be completed by URS/CWC with the authorization of ASARCO. The various areas referenced consist of the following structures:

Phase IV, Stage 1

- o Contractor's Lunchroom
- o Highline Railroad
- Garage
- o Dross Baghouse & 200' Stack
- o Blast Furnace Bldg. Remainder
- Contractor's Change Room
- o Main Office
- Main Natural Gas Valve House
- Charge Building
- Thawhouse

Phase IV, Stage 2

о В	last F	urnace	Flue
-----	--------	--------	------

- o Acid Plant Cooling Towers
- o 400' D&L Stack
- o Acid Plant
- o Blast Furnace Baghouse
- Ore Storage Bins
- o Crushing Mill
- o Pump Tank Building
- o Acid Plant Shop

- Truck Loading & Spray Dryer Building
- Sand Filters
- 200' Acid Stack
- o Monier Flue
- 425' Blast Furnace Stack
- o Sample Mill
- o Auto Shop
- o Main Blower Building
- o Ringling Dust Building

Phase IV, Alternate A

- o Highline Railroad Remainder
- Blast Furnace Office
- o Power House
- o Blast Furnace Heat Exchanger
- o Machine Shop
- Direct Smelt Building
- Breaking Floor

- Locomotive Crane Shed
- Blast Furnace Lunchroom
- o Pump House
- o Blacksmith Shop
- o Carpenter Shop
- o Abandoned Breaking Floor
- Sinter Stockpile Building

Phase IV, Alternate B

- o Masons Shop
- o Motor & Paint Shop
- Paint Storage Building
- Meeting Room

- o High Lead Welding Shop
- o Oil HS
- Refractory Storage
- o Zinc Plant O₂ Building

The construction of the CAMU Phase 2 Cell will be located just to the south of the ASARCO facility, on the west side of Smelter Road. It is to be constructed directly adjacent to and southeast of the CAMU Phase 1 Cell. The construction of the CAMU Phase 2 Cell in general will consist of the excavation of the cell; run-off control pond, and run-on diversion ditches; sub-grade preparation; construction of the compacted clayliner, HDPE liner system, and cushion layer; placement of 2006 and 2007 waste; and the construction/placement of the CAMU temporary cover.

1.3 Pre-Construction Activities

Prior to the initiation of field operations, the following preconstruction tasks will be completed:

- Site-Specific Health and Safety Plan (HSP);
- Detailed Construction Schedule;
- Establishment of storm water and run-off precautionary measures
- o Establishment of administrative offices, staging areas; personnel decontamination facilities;
- General construction permitting will be completed prior to on-site activities; and
- o A preconstruction meeting will be held with ASARCO personnel and/or appointed representatives.

Site-Specific Health and Safety Plan

As required, a site-specific Health and Safety Plan (HSP) will be developed for this project. The purpose of the plans will be the protection of personnel and the environment on-site, as well as the general public and environment in adjacent properties and neighborhoods. The site-specific Health and Safety Plan will be enforced within site boundaries at all times. Tailgate safety meetings will be held at the beginning of every work shift; during new phases of operation; at the time new personnel are introduced to the site; and when site conditions warrant such meetings. These meetings will identify potential workplace hazards and problems so that appropriate control measures can be implemented. The HSP will establish procedures and address emergencies that may arise during all site activities. Emergency vehicular access, evacuation procedures, and a listing of all contract personnel with phone numbers will be included in the HSP.

Detailed, specific health and safety issues related to the former processing, storage, and material handling areas within the Facility, will be identified by the URS/CWC Health and Safety Officer.

For those employees to be certified to participate in abatement and environmental activities, employee certifications will be kept on file in the project field office. Employee training requirements will meet the requirements as specified in the Construction Documents and as restated below:

Type	Required Environmental Health and Safety Training	General Work Tasks
GROUP A	None	General Work Force Off Plant
GROUP B	No 40 Hr OSHA	Topsoil Removal And Stockpile
	Blood Lead Tests	Topsoil Replacement
	No Physical	
	Respirator Fit Test	
	Site Specific Training	(Additional PPE = Respirator, Coveralls, Showers, Lunchroom)
GROUP C	40 Hr HAZWOPER-OSHA	Load, Haul, Place And Compact Waste Materials And On-Plant Tasks
	Blood Lead Tests	Demolition
	Full Physical	Cleaning
	Respirator Fit Test	Backfill, Grading, and Capping
	Site Specific Training	(Additional PPE = Respirator, Coveralls, Showers, Lunchroom)
	Asbestos - 8 Hr Worker Awareness OSHA	Asbestos Abatement Workers Only

Following is a more specific outline of the various tasks and the associated training required:

Task for 2007 Cleaning & Demolition Project	Required Environmental Health and Safety Training
Mobilization and set-up field office and related facilities	Group A
Pre Demolition Tasks (Lock and Tag Utilities, Remove Acid Catalyst, etc.)	Group C
Cleaning	Group C
Demolition	Group C
Post Demolition Tasks (Fence, Barricade walkways, Seal flues and ducts, etc.)	Group C
Load CAMU with appropriate waste	Group C
Properly Dispose of All solid/liquid waste that cannot go into CAMU	Group C
Backfill, Grade, and Cap Site	Group C
Extend and Survey Monitoring Wells	Group C
Prepare As-Built Survey	Group C
Final Cleaning	Group C

Task for CAMU (RCRA Landfill) Construction	Required Environmental Health and Safety Training
Mobilization and set-up field office and related facilities	Group A
Site layout surveys	Group A
Install site access controls (temporary fence and gates)	Group A
Install storm water BMPs (temporary run-on diversion ditch, silt fence, etc.)	Group A
Construct access roads	Group A
Strip and stockpile topsoil and subsoil (upper 8")	Group B
Strip and stockpile subsoil (8" to 24")	Group A
Excavate and stockpile soils from CAMU cell (below 24" depth)	Group A
Grade, roll and compact liner subgrade	Group A
Place and compact Compacted Clay Liner (CCL)	Group A
Grade, roll and compact CCL surface for HDPE	Group A
Install secondary containment HDPE	Group A
Install secondary containment geonet	Group A
Install secondary containment leachate removal system	Group A
Install primary containment HDPE	Group A
Install primary containment geonet and geotextile	Group A
Install primary containment leachate removal system	Group A
Crush or otherwise break oversized concrete debris and brick into -3/8" or	Group C
less dimensions	
Traffic control	Group C
Dust control	Group C
Haul road maintenance and continuous sweeping	Group C
Load and haul waste soil and debris from plant	Group C

Task for CAMU (RCRA Landfill) Construction (continued)	Required Environmental Health and Safety Training
Place and compact waste soils and debris in CAMU	Group C
Construct permanent run-on diversion ditches, remove temporary run-on diversion ditches	Group A
Prepare seedbed and mulch, seed, & fertilize cap of CAMU & other disturbed areas	Group A
Install perimeter chain link fence, gates and signs	Group A
Final Cleaning	Group A
Final Contract Submittals	Group A

Detailed Construction Schedule

A detailed construction schedule will be submitted to ASARCO. This schedule will include durations and milestones for all activities anticipated during asbestos abatement, cleaning; structure demolition and salvage; and material handling and transfer; and CAMU construction. The schedule will be in sufficient detail to define the path of the project.

Storm Water Prevention Pollution Plan

The site's existing Storm Water Prevention Plan (SWPPP) will be utilized for this scope of work. This Plan describes storm water prevention procedures to be utilized during the work. In general, storm water runoff is routed to the internal plant water handling system. Storm water and run-off will be directed to the plant water system for treatment via the High Density Sludge (HDS) plant, to be operated by ASARCO personnel.

In areas where cleaning and/or demolition could potentially create dust laden runoff, URS/CWC will protect the drains as necessary to prevents contaminants from entering the system. This protection will consist of a combination of sand bags, hay bales, and filter fabric strategically placed to remove the solids while allowing the storm water and/or run-off to continue to the existing storm water containment and treatment system prior to discharge. URS/CWC will ensure storm water and/or run-off is free of grease and oils by utilizing methods to prevent and promptly clean any oil and grease spills.

Site Security

URS/CWC understands that the facility is currently surrounded by security fencing or structures, which will prevent unauthorized personnel access to the site. URS/CWC will follow sign in procedures and check in at the main facility gate or another gate/entrance specified. URS/CWC will control access to work areas during operating hours through the monitoring of a single ingress/egress location with mandatory sign-in procedures for all personnel. During off-hours, sensitive work areas will be cordoned off with temporary barricades, delineators and caution tape.

During the course of the 2007 Demolition, structures will be removed that are currently acting as a site "fence". URS/CWC will coordinate activities with its designated fencing subcontractor such that as structures are being demolished, new chain link fence is installed to close the opening created by demolition. In the event that the new permanent fence cannot be completed across the new opening, temporary fence panels on stands will be installed to close the opening. A temporary, delineated barricade will be put in place. The use of A-frame barricades, delineators, and caution tape will further be used to define the facility at these points.

Temporary Facilities / Construction Control

URS/CWC will establish temporary facilities and construction control procedures to be implemented at the project site. ASARCO will provide and URS/CWC will maintain suitable temporary office space to coordinate field construction activities. Adequate sanitary facilities, fences, barricades and scaffolding will be provided as needed. Storage for tools, light equipment and appropriate signs will also be established, as needed, for this project. Temporary services will be coordinated with ASARCO representatives for existing and future construction activities, demolition activities, and site traffic. Safety will be managed, including the monitoring of vehicular and pedestrian traffic and public safety, as needed.

Delineation of Work Zones

Work zones will be established during pre-mobilization planning. In general, this will include the following:

- Lead/Decon exclusion areas
- Asbestos removal areas:
- Equipment staging areas;
- Personnel decontamination areas;
- Storage areas;
- Demolition and salvage areas;
- Loading areas/staging of off-site waste; and
- Field office/support areas.

General Construction Permitting

The following lists the applicable permits and/or notification that may be obtained or that may need to be notified by URS/CWC and/or ASARCO prior to the initiation of any fieldwork.

Montana Rail Link

Railroad Crossing Permit

Lewis and Clark County

Traffic Control Permit

State of Montana

- Montana Department of Environmental Quality (MDEQ)
- Division of Occupational Safety and Health (OSHA) Department of Industrial Relations -Notification of Asbestos Abatement
- Division of Occupational Safety and Health (OSHA) Department of Industrial Relations -Notification of Demolition Activity S-691

Preconstruction Meeting

Following the completion of the tasks outlined above, a preconstruction meeting will be held at the facility or other location designated by ASARCO. The purpose of the meeting will be to discuss the Scope of Work and the roles of the parties involved. Details regarding the date that fieldwork will be initiated, site access requirements, hours of operation, deliverables required by ASARCO, and locations of construction equipment, staging and cleaning areas would be discussed. Participants in the meeting will include the ASARCO project team and the URS/CWC project team.

1.4 Mobilization

Following the preconstruction meeting, work areas will be secured and a central field office will be established. Equipment and materials necessary to complete the project will be moved to the facility and staged at predetermined locations within the facility. In addition to the field office, the following work areas will be established:

- o Establishment of on-site electric and water service (as needed);
- Personnel decontamination areas:
- Temporary conveyance systems;
- o Equipment lay down areas; and
- Demolition salvage staging and loading areas.

The work areas listed above, as well as, other tasks that will be conducted during the mobilization phase of this project is described in the following sections.

1.5 Personnel Decontamination Areas

Personnel decontamination areas will be established for each exclusion zone and work activities that may expose workers to unique safety hazards and/or hazardous levels of chemicals and waste materials. These requirements will be used to determine appropriate personnel protective equipment (PPE) that will be used in each of the separate plant areas during each phase of work. Required PPE, decontamination procedures and personnel decontamination equipment will be identified in the Health & Safety Plan.

1.6 Temporary Conveyance Systems for Surface Water

Existing collection trenches and sumps will be used to collect surface water during decon activities. The locations of these trenches and sumps will be confirmed and identified by the URS/CWC, utilizing

existing project utility plans, during the pre-mobilization activities as well as throughout the completion of on-site work activities. During collection of surface water, this material will run through ASARCO's current WWT Waste Water Treatment facility (being run and operated by ASARCO). ASARCO will handle materials once it hits the WWT. ASARCO will be responsible for any required waste (water) treatment and disposal permits required on the project.

1.7 Demolition Salvage Staging and Loading Areas

Several demolition salvage staging and loading areas will be established for cleaned material and equipment. These areas will be easily accessible to expedite loading and transport activities. Surface cover in these areas will be durable enough to withstand the storage and movement of heavy scrap material without breaking apart and creating difficulties when loading the material or impacting the areas.

1.8 Demobilization and Contract Close-Out

Following the completion of all field activities, the site will be cleared of temporary construction facilities as well as the disconnection and removal of temporary power sources. All equipment brought to the jobsite throughout the project will also be removed. A site walk will be conducted with the ASARCO Project Management Team at the completion of demobilization. This site walk will be used to receive closeout of construction activities or identify "punch list items" to be addressed. Following the completion of field activities, URS/CWC will submit to ASARCO any documentation that had not been forwarded to ASARCO on a weekly basis.

2.0 MATERIAL REMOVAL AND HANDLING PROCEDURES

This section describes the procedures that URS/CWC will employ to remove and/or decontaminate those areas that have been impacted by hazardous substances (heavy metal laden dust, acids, etc.) and/or containing Universal Waste items. Universal waste (UW) includes the removal and packaging of Fluorescent Light Tubes, High Intensity Discharge (HID) lamps, PCB and non-PCB ballasts, and mercury containing equipment from the 2007 Cleaning and Demolition Project.

As addressed in the ASARCO Project Specifications, URS/CWC will provide the personnel and equipment to perform the necessary waste removals prior to demolition. ASARCO has required that hazardous materials are to be addressed and that the facility will be free of appreciable hazardous materials prior to the initiation of any demolition activities.

2.1 Lead and Heavy Metal Dust and Debris Removal

Located within the ASARCO facility are areas that have been impacted by lead and other heavy metal dusts and debris, which were utilized and/or were a by-product in the manufacturing of lead bullion. The intent of the interior cleaning is to reduce the potential for fugitive dust emissions during demolition. URS/CWC will take precautions, as addressed in the Site-Specific Health & Safety Plan, C:\TEMP\Solid And Hazardous Wastes - 2007 (URS Work Plan).Doc\HLN\5/17/07\065

when working with and handling heavy metal contaminated materials. The surface areas to be handled due to heavy metal dust and debris contamination will include those areas delineated on Sheet 3 of the Construction Drawings (Attachment A). In general, URS/CWC's method for addressing heavy metal dust /debris removal will consist of:

- Work Area preparation
- Initial Dry Removal of Bulk Solids
- Moistening of Building Material for Dust Control

Work area preparation will consist of delineating a work area that can be both easily contained and is considered a cohesive area unit with like contamination (i.e. Baghouse, Blast Furnace Flue, Monier Flue, etc.). Once the work area has been defined, URS/CWC will begin the removal of bulk solids. The goal of this task will be to remove the gross, dry accumulation of contamination (lead, lead dust, lead debris, acid residues, etc.) at all accessible areas. This will be performed by personnel utilizing hand tools and a trailer mounted "Hurricane" vacuum system with HEPA filtration. Waste will be loaded via air tight chute into appropriate containers (i.e. double 6-mil mega bags, etc.) and staged for temporary placement in the concentrate storage and handling building or hauled directly to the CAMU. This initial removal of the gross, dry accumulation of solids at ground level will ensure a more effective and more controlled method of demolition and overall dust control.

Upon completion of the gross debris removal at ground level, URS/CWC will initiate the pre-wetting and moistening of the building interiors. After review of the building interiors, URS/CWC has determined that accumulated dust on various horizontal surfaces within the interior presents a potential for airborne dust. The purpose of this operation will be to mitigate airborne dust generation during the above grade demolition operation. This pre-wetting activity will be accomplished through a combination of methods, including water hoses, water trucks, and misting systems. URS/CWC realizes that is not feasible to remove all heavy metal laden dust from all surfaces and confined areas prior to demolition. URS/CWC will focus its efforts on mitigating the generation of airborne dust during the demolition and material handling operations.

URS/CWC will utilized the services of a subcontractor, IRS Environmental, to perform the removal of lead and heavy metal laden dust and debris from the subject structures. IRS Environmental has further procedures for this activity as delineated in their "Hazardous Material Abatement Plan" which is provided in Attachment B.

2.2 Catalyst Converter Vessel and Acid AST Decontamination

The Converter Vessel and various acid above ground storage tanks (ASTs, if any) will require cleaning to prevent the generation of airborne dust or acid laden mists that could potentially by an eye, skin, and inhalation hazard. URS/CWC will initiate the decontamination process by removing all solid contents from the tanks and staging for eventual disposal in the CAMU. Catalyst from the Converter vessel will be removed via vacuum truck with personnel entering the vessel utilizing properly planned and coordinated confined space protocol. Catalyst removed during this task will be containerized and will be placed in the concentrate storage and handling building or hauled directly to the CAMU.

Upon removal of contents from the other acid ASTs (if any), cleaning of the tanks will be conducted by utilizing a high pressure water source to triple-rinse the interior of the tanks. The free liquids and pumpable sludge will be removed from the tanks through a 2-inch or 3-inch vacuum hose into a DOT licensed vacuum truck or 55-gallon drums. Once the triple-rinsing of the tank is complete, rinseates generated from the cleaning process will also be placed into appropriate containers and staged accordingly for disposal by ASARCO. As a precautionary measure, URS/CWC will have available a small quantity of lime rock that can be utilized in the event of an acid release/spill. This lime rock will be used to neutralize any release and will facilitate the overall clean-up of such an event. Additionally, URS/CWC may utilize this lime rock as a means of neutralizing the pH of materials generated during the cleaning and washing process. This procedure could allow for placement of these liquids into the on-site waste water treatment system.

Upon the completion of the tank cleaning, the tank will be released for general demolition with the resulting metal being staged for salvage.

2.3 Stack Cleaning

URS/CWC will utilize the services of a subcontractor, Gerard Chimney Company, to perform the interior wash down of the three (3) concrete/brick chimney stacks: 425' Blast Furnace Stack, 400' D&L Stack, and the 200' Acid Stack. The purpose of this cleaning activity will be to remove loose dust and debris prior to the felling of the stacks. The procedure for cleaning will be typical for all stacks

Prior to beginning, the work area will be roped off and warning signs posted to prevent unauthorized personnel from entering the work area. Due to the overhead hazards associated with this work, all personnel working on-site will be shown the flagged area and asked to sign an acknowledgment. Additionally, to prevent further damage to equipment and vehicles, there will be a 150' perimeter exclusion zone around each stack whereby all vehicles parked within this radius of the stack must be moved or relocated while the work is underway.

To the extent possible, URS/CWC will utilize the existing stack ladders to gain access to the top of the each stack. In the event that the stack ladders are not safe to use or if additional access is needed, external chimney ladders may be erected as needed. Once access has been gained, an external, bracket type chimney scaffold will be installed at the top of the stack. A power elevator and other staging equipment may also be used in conjunction with the scaffold. In accordance with OSHA "Confined Space Regulations", an evaluation of the stack interior will be performed prior to entry for the interior wash down project. The evaluation will analyze the interior for confined space hazards including testing the atmosphere for safe levels of oxygen, combustibles and carbon monoxide.

With the exterior rigging in place, the stack interior will be rigged with a multi-point suspended scaffold. The suspended scaffold will allow access to the full height of the stack interior. The entire stack interior will be power washed, from the top down, with a 10,000 PSI – 10 GPM water blaster. The water will be allowed to collect at the bottom of the stack. The water runoff will be directed to an active drain leading to or pumped to the existing water treatment system. The use of excess water during this procedure will be minimize. Run-off will be controlled and infiltration will be minimized.

This process will be performed for all three (3) stacks. When the project is completed, all scaffolding and rigging equipment will be removed from the chimney. Upon completion of the cleaning, the stack will be released for demolition.

2.4 Removal of Oils from Site Equipment

Located within the facility, miscellaneous equipment is present that utilizes hydraulic oil or other oils in their operating capacity. Upon assessing these units, personnel will clear the area of all obstructions. All electrical service will have been disconnected prior to this time. URS/CWC will locate and coordinate the equipment to remove the oils stored in the reservoir tank or unit itself. Once the reservoir is opened, personnel may utilize mechanical (metal or plastic) hand pumps or vacuum devices to facilitate oil removal. Hand pumps, if used, will pump the oil directly into 55-gallon drums. Drums will be located adjacent to the work area during oil transfer to reduce spillage. Once filled, the drum will be sealed and labeled with the type of substance and location. Absorbent will be available on-site during oil removal and transfer as a contingency in case of spillage. Used absorbent will be placed in a drum labeled "Oily Absorbent" or incorporated into an existing oily absorbent stream generated from general facility decontamination. URS/CWC will promptly clean up oil and grease spills to prevent contamination of storm water and/or run-off.

2.5 Universal Wastes

As observed throughout the facility, various Universal Waste (UW) items which although are not considered a hazardous waste, will require special handling and recycling or disposal by EPA and State regulations at a permitted and licensed treatment, storage, disposal facility. Hazardous waste and UW components may include the following items:

- Fluorescent Light Tubes
- High Intensity Discharge (HID) Lamps
- Light Ballast containing PCBs
- Mercury Containing Equipment
- Refrigerants (CFCs)

Removal of Fluorescent Light Tubes and HID Bulbs

URS/CWC will ensure that all electrical systems have been deenergized, thus personnel can proceed with the removal of the fluorescent lights and HID bulbs without electrical issues. Once established, the plastic cover of the light fixture, if present, will be removed and placed on the floor, at which time the exposed fluorescent light tubes will be removed by hand and placed in a rubber/plastic container for temporary storage. URS/CWC will utilize rolling scaffolding, man lifts or ladders to support workers on single story floors. For ceilings that are of greater height, a motorized lift will be utilized to assist in retrieving light tubes and other lighting components.

The High Intensity Discharge (HID) bulbs will be removed in the same manner previously outlined for the fluorescent tubes. Removal of the HID bulbs will require the use of motorized boom-lifts in order for personnel to achieve accessing the lamp fixture at much greater heights. HID bulbs will be unscrewed from the lamp housing and placed in cardboard boxes or drums supplied by the receiving facility. The containers will be filled with the bulbs and as they become available, personnel will seal

the box and place a label on the box indicating material type and quantity. All storage containers will be relocated to a designated temporary storage area. The fluorescent light bulbs and HID bulbs will shipped off-site for disposal.

Handling of Non-PCB and PCB Ballasts

After removal of fluorescent light tubes, the protective ballast cover will be removed to access the light ballast for inspection. The inspection will be completed with the fixture in place. Inspection of the light ballast will include careful review of the ballast label to determine if the ballast contains PCBs. If the ballast is not marked "No PCBs" or the label is removed or unreadable, it shall be assumed that the ballast contains PCBs. If the ballast does not contain PCBs, as determined by this definitive visual inspection, the non-PCB ballast will be left in place for demolition.

During removal of the ballast, if any portion of the light fixture is impacted with PCB oil due to leaking, the portion of the impacted fixture may be decontaminated by scraping the oil from the ballast cover. Any generated residue or wiping clothes will be considered PCB contaminated and incorporated into the drummed ballast waste stream. Once the PCB ballasts have been removed and are staged in a central location, the PCB containing ballasts will be placed in 55-gallon drums for eventual off-site disposal.

Mercury Containing Equipment

Each identified piece of mercury containing equipment designated for removal will be located, isolated, and cleared of all obstructions. Disconnection of the isolated items will proceed utilizing all safety and standard removal procedures for the specific item. Procedures will include lockout/tagout of electrical feed to building or area, cutting electrical lines to the unit, and removing isolated item. As removal of like items proceed, thermostats, thermometers, ignitron tubes, barometers, etc. will be removed, the wires clipped and placed in a 5-gallon spill proof plastic containers containing several inches of absorbent media. This media will cushion the ampules during facility transportation as well as absorb any free-flowing mercury if ampules were to break or leak. In case of a spill or release, URS/CWC personnel involved in the removal and handling of mercury containing equipment will be given a Mercury Spill Response Kit. The mercury containing devices will shipped off-site for disposal.

Refrigerants

The specific item containing Chlorofluorocarbons (CFC) (i.e. air conditioning units and chillers) will be located and accessed for recovery. The CFC containing equipment will be disconnected utilizing the proper safety and standard removal procedures and evacuated. Air conditioners and chillers will be disconnected from their power sources. URS/CWC will provide certified refrigerant recovery subcontractor to facilitate evacuation and recovery of the refrigerant. URS/CWC personnel will document on an internal waste removal log, the quantity in pounds of CFCs recovered from the various units. Once the unit is cleared, the unit will be tagged with an agreed upon colored tag indicating "CFCs Removed".

3.0 ASBESTOS ABATEMENT METHODS

Materials located within the facility considered for asbestos abatement include, but are not limited to: rope, tile, mastics, transite panels, window putty, roofing materials, metal panels, etc. URS/CWC will utilize the services of a subcontractor, IRS Environmental, to perform the asbestos abatement activities. Their work procedures and methods are described in their "Hazardous Materials Abatement Plan" which is included in Attachment B.

4.0 UTILITY DISCONNECTS

Prior to the initiation of any fieldwork, existing plant utilities and process piping systems will be identified. These procedures will be conducted with URS/CWC survey personnel and the assistance of the designated ASARCO operations person. It will be necessary to lockout most of the utilities and process piping in all areas of the plant prior to cleaning and dismantling. URS/CWC management will determine what systems need to remain active to facilitate the removal of residual products, and cleaning and demolition activities in each of the plant areas.

A detailed description of utility systems lockout protocol is included in the Health and Safety Plan. Lockout procedures will generally include the following objectives:

- Lock-out (close, disconnect, plug, and/or blank) and tagging valves;
- Lock-out and tagging, or disconnection of electrical systems;
- Capping/plugging of storm water lines as necessary to complete work; and
- Documentation of utility caps on Owner supplied facility utility maps.

5.0 DEMOLITION ACTIVITIES

5.1 General

The demolition activities at the site require extensive experience to coordinate services and minimize migration of dust and debris. The demolition of a building can be achieved in a variety of manners depending on the type of structure, reasons for demolition, the proximity to the surrounding structures, safety, and the requirements for salvage or resale. URS/CWC will use a sequence of demolition approach for the major building structure and will compile information from the onsite as-built drawings, and onsite inspections of the buildings to allow our operations and staff to formulate a sequence of demolition of each building to ensure safe working conditions. Typically, this approach involves the dismemberment of the building using breakers, shears, pulverizers, processors or cutting equipment. This technique is generally used on steel and concrete/masonry buildings (spans up to 150 feet) where large shears can cut various members and place the members or drag the members into a staging area where grapple equipment can stack and pile for salvage or further handling.

Our approach focuses on the removal of the bay-to-bay supports (columns and beams), and the flooring and roofing structures in a sequential, controlled manner. This removal approach is excellent C:YTEMP\Solid And Hazardous Wastes - 2007 (URS Work Plan).Doc\HLN\5/17/07\065

when the project requires the salvage of building materials; when dust control requirements warrants a controlled demolition process. Salvage activities including loading, separation, etc. will continue concurrently with the demolition process.

As with every demolition project, the principle considerations are stability of the building structure and the safety of the working personnel and related areas within the collapse envelope of the structures. The following section outlines URS/CWC procedures:

5.2 Isolation Activities Before Demolition of Structures

Before and/or concurrent with the abatement and removal of regulated wastes, URS/CWC will conduct isolation activities to create a physical separation of the 2007 Demolition areas from the surrounding structures, piping, items, that are to remain. This will be conducted in a variety of methods employing both excavators equipped with shear attachments and laborers with hand tools and cutting equipment. Prior to initiation of the isolation work, URS/CWC will perform an investigative site walk with ASARCO personnel to re-mark and re-designate the lines of separation between the demolition areas and surrounding areas to remain.

Piping, conduits, and structures that are accessible to an excavator will be selectively sheared at the marked isolation location. The member to be isolated will be cut in such a manner that it will fall away from areas to be remain and be protected in place. As members are cut and removed, they will be placed behind the excavator for handling and staging accordingly. Certain piping, conduits, and structures that are not accessible to an excavator that require isolation will be removed by hand using man lifts to position workers with hand tools to cut members free using hand saws or torch cutting equipment. Components will be secured to a crane, forklift or bucket loader and lowered to the ground, or may be allowed to sag to the ground as supports are disconnected.

Upon completion of the isolation task, a physical separation will exist that will ensure areas to remain are protected in place and that the demolition activities can progress unimpeded. Inspection of operations will be conducted by both the Site Superintendent to ensure that exclusion zones are established and that safe working conditions exist at all times. Regular daily safety meetings will be conducted by each foreman to discuss methods, exclusion zones and safety practices. Materials are to be removed from the working area on a daily basis to provide safe working conditions for the men and equipment.

5.3 Demolition of Buildings and Structures

Prior to the above grade structural demolition, the following items will be confirmed complete:

- Decontamination/Cleaning
- Universal Waste removal
- Required interior and exterior asbestos abatement operations

Steel Structure Demolition

The approach to the building demolition is to use excavators (track-mounted) equipped with specialty attachments (such as shears, breakers and grapples) to structurally remove, bay by bay, the various structural members. The sequence approach is as follows:

- Each structure will be demolished using excavators with specialized attachments. Each truss frame structure between bays will be lowered and/or dropped to the ground by separating the portions of the tension members on the bottom chord to cause the truss to sag in between two bays.
- o The excavator will then separate the remaining tension members of the truss to allow one end of the main truss to become separated from the supporting column.
- The other end (still connected) of the truss will be disconnected. The remaining roof transverse trusses, connecting main truss to main truss shall be removed to allow placement of main truss behind the equipment for salvage. The remaining portion of the roof attached to the next bay section will be cut allowing for removal. The excavator will then drag the roof section behind for stockpiling and separation. This process is repeated for each of the numerous bays within each of the above referenced buildings.
- Steel columns will be cut with a shear at the base, and allowed to fall to the ground.

All materials will be staged behind the working areas of the primary excavators, where they will be prepared by additional shears before they are loaded into dump trucks and hauled to the steel staging area just to the north of the Coverall Buildings. Materials will be continuously removed to allow other operations to proceed.

Concrete/Masonry Structure Demolition (Baghouse Bldg., Baghouse Flue, Monier Flue, etc.)

A 100,000 lb excavator (or larger), equipped with a breaker, and a track loader will be utilized for the complete above grade concrete demolition operations of the various concrete and masonry structures. The exterior walls are constructed of a either a concrete block material or a brick material. Starting at one end, URS/CWC will commence breaking from the top of the wall down from column to column. Once complete with the exterior wall at the end, URS/CWC will commence the removal of the concrete upper floor slabs within the same constraints as the wall. This process is limited to the first interior column line. Demolition of the elevated floor slab and walls will be completed in a top down approach for each individual column line. URS/CWC will break the closest interior columns under the roofs and floor, allowing the individual floor to sag. URS/CWC will work into the building, breaking the sagged slabs and allowing the debris to fall to the ground. As floor slabs are removed and area is created in front of the equipment, URS/CWC will continue to break interior columns from the top down.

Once complete for that column line, URS will repeat the same procedure for the remaining column lines Utilizing a track loader, the broken concrete debris will be removed and transported to the designated staging area for placement into the concentrate storage and handling building or hauled directly to the CAMU, (dependent upon CAMU construction phasing).

Stack Demolition

Upon completion of the stack cleaning as described above, URS/CWC, and its subcontractor (Dykon), will commence with the demolition/felling of the stacks by explosives. Prior to Dykon arrival,

URS/CWC will remove all flues and equipment servicing the stacks. This will be done with the use of heavy equipment and personnel isolating the stacks as described above.

Upon Dykons arrival, ASARCO, URS/CWC, and Dykon will determine the best area for each individual stack to land. This will be open ground area, mid-point between the areas remaining. A transit will be placed at this point to mark the centerline of the stack. From this point, Dykon will measure ¼ of the circumference in both directions to determine the exact centerline of rotation. Dykon will "layout" the stack according to an engineering analysis and drawing (to be provided upon further analysis). A transit will be used so that a precision line of fall can be determined. To ensure that enough material will be removed on the fall side, three (3) rows of holes will be drilled on 18" to 22" centers. Past the line of rotation, a triangle area will be outlined by line drilling a series of holes. This area will be removed to insure the stack hinges on a single line of holes that will be drilled around the back of the stack (see attached drawing). There will also be a window removed on the fall side of the stack creating two columns that the URS/CWC will drill with three lines of 1 ¾" holes each.

It is also necessary to relieve the tension on the hinge side of the stack once the explosives are detonated. This can be accomplished by two methods. Either URS/CWC will drill an additional line of 1-¾" holes circumnavigating the opposite side of the stack, which will be loaded and detonated with the blast, or it is acceptable to chip the concrete away enough to expose the rebar on both interior and exterior mats to torch cut it. In ether case, a three-foot area on both sides of the stack will be left untouched to provide lateral stability for the felling of the stack. A test blast will then be conducted on the stack to verify that a sufficient quantity of explosives is being used for the demolition. Several holes in the hinge area will be loaded with various quantities of explosives, covered with steel plates, shot, and reviewed to determine the results. Once the debris and reinforcing steel has been removed, a second test blast will be performed on the opposite hinge and the center hole, adjusting the explosive ratio as necessary. URS/CWC may utilize an excavator with hydraulic breaker to remove the remaining portions of concrete from the other stacks.

A few days prior to the blast, a local explosive supplier contractor will deliver the explosives to the site by a vehicle that meets all the local explosive haulage requirements. The explosives will be guarded onsite for the duration of the production loading. Dykon will then commence with the production loading of the stacks after the test blast. After loading is completed, URS/CWC will provide and place two layers of 10 oz geotech and two layers chain link fence or sufficient steel around the stack. This will prevent debris and flyrock from escaping the immediate area.

The surrounding structures will be protected as needed, based on their distance from the structure. All windows, doors, or equipment in the immediate vicinity should be protected from both shrapnel and dust invasion, as necessary. A pre-blast survey will be conducted by an independent firm to verify that the surrounding structures are not affected by the blast. Seismographs will be placed at various locations surrounding the blast sight to verify that blast vibration does not exceed a maximum value. At a 500' radius from the structure the estimated peak particle velocity should be less than 0.25 inches/ sec.

The initiation system will be a non-electric system. This system uses shock tube and detonating cord to transmit the signal to the blasting caps instead of electricity. The non-electric system provides a

better safety factor than the electric system of initiation. Premature detonation as a result of lightning and radio interference is negated with this system.

A security area will be established between URS/CWC and the local police department. This plan will indicate safe viewing locations for the media, general public, and personnel involved with the demolition.

Prior to the blast, the area around the stack will be cordoned off as determined by all parties concerned. This area will be rechecked while the final wiring is completed and verified for continuity. When all is ready, a series of sirens will be sounded and the blast set off. Following demolition, Dykon's personnel will check the area and an all clear signal will be given before the cleanup process can begin.

Utilizing a track loader, the broken concrete debris will be removed and transported to the designated staging area for placement into the concentrate storage and handling building, or hauled directly to the CAMU (dependent upon CAMU construction phasing).

5.4 Stockpiling

As steel structure and concrete demolition is progressing, material will be hauled and stockpiled in the designated Material Staging and Processing areas located within the demolition area footprints. At these locations both general demolition debris and salvageable metal materials will be sized to meet the requirements of the final disposition location. Once general demolition debris has been segregated and sized, URS/CWC will load and transport the material to temporary storage in the concentrate storage and handling building or haul directly to the CAMU. At the concentrate storage and handling building, the material will be dumped and consolidated as much as possible to maximize the interior storage space. With regards to salvageable metals, URS/CWC will size the material to its requirements and stage the materials for eventual loading into railcars and/or trucks for transport to the recycling facility.

5.5 Debris Transportation

URS/CWC understands the critical nature of loading and transporting of waste debris from either temporary storage or demolition areas to the CAMU. Therefore, URS/CWC will take a proactive approach to ensure that the transportation of waste debris does not generate dust or spread waste debris outside the limits of the loading area and the final CAMU placement area. For the currently stored waste debris in the Coverall Building and concentrate storage and handling building, URS/CWC will place a sprinkler system atop the large debris fields that will slowly distribute and control water and allow for the moistening of the debris. Due to the large sections of debris in these buildings, this process will be allowed to continue until a point where URS/CWC feels the moistening will no longer be required to control dust. URS/CWC will monitor the sprinkler systems to ensure that dust suppressing water does not become a run-off problem. For all demolition debris, as further described below, URS/CWC will utilize water trucks and misting systems to keep debris moist during the demolition and loading process. These two operations will minimize airborne dust during the loading operation and be the first step in prevention during transportation.

URS/CWC anticipates utilizing 25-35 ton rock trucks and/or 10-wheel dump trucks, or a combination thereof, to haul the material to the CAMU. All trucks will be equipped with sealed tail gates that will be closed during times of hauling to ensure that debris is not released outside the limits of the loading and dumping area. In order to further mitigate dust generation during hauling operations, URS will construct a truck moistening station at the exit of the ASARCO site over to the CAMU site. This station will consist of a scaffolding platform on which personnel will mist water on the loaded debris as a final step before it travels outside the property fence line and across the County road. The spray will add a final moisture barrier/binder to the debris for the short distance to the CAMU. Transport vehicles will be limited to a maximum 10 miles per hour while both on-site and during transport. Limiting speeds will prevent dust from become airborne during transport and will prevent the kick-up of dust due to rolling tire action.

At the CAMU dump area, a water truck will be placed to lightly mist debris and knock down any dust during the dumping and spreading phase of the debris in the CAMU. Use of water will be kept at a minimum. At all times, however, the elimination of dust will be given top priority.

Transport of waste on-site will follow prescribed paths, which will be determined during the course of demolition. Due to the changing nature of the site as demolition of structures progress, haul routes will require modification as site conditions dictate. However, once defined, these haul routes will be enforced to create dedicated routes that can be maintained to mitigate dust and debris migration, and prevent any potential spread of contamination. Maintenance of haul routes will be conducted through routine daily inspection to ensure that debris is not being released. Additionally, haul routes will be lightly wet with a water truck on a frequent basis throughout any given day to prevent the generation of dust due to vehicular traffic. As needed, URS/CWC will utilize the services of a street sweeper to clean the haul routes of accumulated debris and dust. This debris and dust sweepings will be dumped on-site and handled as demolition debris for eventual placement into the CAMU.

5.6 Capping of Demolition Areas

The slab areas where above grade demolition activities have been completed will be sealed in a manner that will mitigate the infiltration of water below the slab through existing or created cracks and crevices. URS/CWC will cover the 2007 Demolition areas, as delineated on Sheets 15 through 23 of the ASARCO Construction Document Drawings (Attachment A) with 10-oz geotextile and a geomembrane cap of 20-mil RPE liner.

Upon completion of the demolition operations and area clean-up, URS/CWC will remove all debris and items from the slab that could possibly penetrate the subject geotextile and geomembrane. URS/CWC will utilize the existing on-site fumed slag as fill material over the remaining demolition slabs/areas. This fumed slag will be placed and rough graded to create the positive drainage required per the Construction Document Drawings. The geotextile and geomembrane will be laid, seamed, and secured as detailed. Additionally, sandbags will be placed intermittently within the center liner area to prevent the liner from being picked up by wind uplift or other forces. This will be done in sufficient quantity to ensure the liner stays in place. As an added preventative measure, URS/CWC will utilize sandbags made of UV Resistant 9-mil PE, which will provide superior UV resistance (compared to standard plastic woven sandbags) to prevent breakdown by sunlight.

URS/CWC will utilize the services of a subcontractor, Northwest Lining & Geotextile Products, Inc., for the installation of the temporary demolition caps. Provided in Attachment C are further details of the geotextile, geomembrane, and liner attachment to be utilized.

5.7 Equipment

A preliminary equipment list is provided below for this project. Equipment of similar size and weight by an alternate manufacturer will be substituted or added if necessary during the course of the project. Attachments used with the below listed Excavators may be interchanged as required to meet the specific requirements of the structure on which they are utilized. Therefore, each excavator may attach a bucket in place of the breaker for load out in particular procedures. Attached is a list of proposed equipment types and sizes:

- o 75,000 175,000 LB. sized Excavators with various attachments
- o Rubber Tired Loaders with a 4cy 7 cy Bucket Capacity
- Track Loaders with a 1.25cy 3.40cy Bucket Capacity
- Skid Steer Loaders
- o 2000 3500 Gallon Water Trucks
- o 25-40 Ton Rock Trucks
- o 10-Wheel Dump Trucks
- Scrappers
- Motor Graders
- Misc. Equipment (Man Lifts, Air Compressors, Torches, etc.)

5.8 Storm Water Pollution Prevention Plan (SWPPP)

URS understands and appreciates the importance of the SWPPP due to the present concerns and conditions of the ASARCO facility. URS will utilize Best Management Practices (BMPs) for various construction activities. From the existing SWPPP, applicable information, such as management practices for the hazardous material storage areas, will be incorporated into URS' Best Management Practices. Other material handling practices related specifically to the decontamination and demolition activities will be addressed. Management practices for cross-contamination control will be addressed, such as avoiding spills from construction vehicles during hauling, loading, servicing, and fueling and controlling contaminated soil erosion. Changes to the storm drainage system due to demolition will be addressed as the structures are demolished and the side conditions change.

Standard erosion control measures will also be utilized, including controlling dust, providing straw bales around storm drain inlets, placing sand-bags at critical perimeter locations, and avoiding off-site tracking of debris from vehicles. Provisions to avoid ponding and maintain excavations free of storm water runoff will be addressed. Typically, this will involve filling these locations prior to storms. Measures for erosion control will be added as the project progresses.

Inspection of the erosion control measures will be made prior to, during, and after storms to evaluate the adequacy of these measures and to manage corrections as necessary. Documentation of the inspection and correction activities will be maintained, as required. Generally, the inspection and

documentation will be done by the Project Manager / Engineer. Copies of the documentation will be forwarded to ASARCO for review and records.

6.0 DUST CONTROL PLAN

The general requirements of this plan are to provide adequate resources to control dust and to detail the means and methods that will be utilized to implement dust control measures during the cleaning and demolition in order to support scheduled activities/operations within the ASARCO facility. URS/CWC's dust control measures are designed to control the emission of visible fugitive nuisance dust. These controls will be accomplished through the use of administrative, engineering, and physical controls that will include, but not be limited to the following:

- Wetting surfaces with water
- o Application of dust suppressants or encapsulates, where applicable
- o Minimizing soil, road, and surface disturbances
- Minimize dusting exposure periods and wind erosion before dust-abatement measures are applied
- Curtailing of work activities during high wind conditions (over 15 MPH average hourly rate)
- Controlling vehicle/equipment speeds (10 MPH maximum)
- Restricting traffic to designated roads/corridors
- o Equipment Selection

URS/CWC considers the mitigation of airborne dust generation to be a priority. Throughout the project, URS/CWC will take all necessary steps to effectively control dust in the working area during demolition operations. As previously mentioned, URS/CWC will remove at ground level and at all accessible areas all gross debris accumulation that could be a source of airborne dust. Furthermore, URS/CWC will institute a program of pre-wetting and moistening building interiors and horizontal surfaces where dust has accumulated. This pre-wetting of the structure interiors will limit the ability of remaining dust to become airborne during the demolition process. As the structures are demolished, the dust will be allowed to fall to the ground where it can be gathered, containerized appropriately, and properly managed.

6.1 Application with Water during Construction

The use of water will be the main source for dust control. URS/CWC will keep all work areas (including roads, access points) within the facility, wet during work activities. This will be accomplished by using existing 2,000-gallon water trucks. Each water truck will be equipped with spray-bars for wetting haul and access roads; water cannons and necessary hoses, valves, and fittings will be used to provide spray water for dust control where needed in remote areas where a water truck can not be utilized.

Furthermore, during the life of the project water truck(s) will be available during the actual demolition of the above grade steel and concrete structures. Localized fine water spray pointed to the source of demolition (and therefore dust source) reduces dust particles to become airborne. Additionally, URS will utilize a Dust Boss™ water misting system. The Dust Boss™ is a fully automatic, oscillating ducted fan with a high pressure misting system that creates a high performance dust barrier. DustBoss™

uses a high pressure misting system to create an ultrafine mist that attracts dust and drives it to the ground. During structure demolition, this equipment will be pre-positioned in an area that will ensure the generated dust barrier is effective. To minimize water run-off, both the water truck and Dust BossTM water supply will be used only if necessary.

6.2 Dust Control during Stack Demolition

With regards to the felling of the stacks, all stack interior cleaning will have been previously performed to remove all loose dust and debris that could be a potential dust source. Dust generated from the felling process will come from two primary sources: (1) from existing soil and dust particles at grade, and (2) from the fracturing of stack concrete as it impacts the ground. To minimize the amount of dust generated from at grade soil, URS/CWC will utilize water trucks to wet the ground of anticipated stack landing zone. This will be performed on the day of the blast, based on the landing zone analysis of the blasting subcontractor. With regards to the fracturing of stack concrete as it impacts the ground, URS/CWC will utilize several Dust BossTM water misting systems. These systems will be positioned adjacent to the landing zone of the stack to be felled. They will be turned on prior to the actual felling of the stack to create curtain of water mist particles around the impact area, thereby, minimizing generation of airborne dust. At all times during the stack felling process, the minimization of dust will be given top priority.

6.3 Dust Control during Loading and Debris Transportation

During loading, unloading, and material transfer operations, URS/CWC will minimize material drop heights to reduce emission of fugitive dust. During loading of demolition debris, additional spray water will be utilized to control fugitive dust emissions from this operation. After demolition debris is loaded into the truck beds, URS/CWC will then moisten the debris payload down prior to the vehicle leaving the loading areas.

As described above, during debris transportation, URS/CWC will construct a truck moistening station at the exit of the ASARCO site over to the CAMU site. This station will consist of a scaffolding platform on which personnel will mist water on the loaded debris as a final step before it travels outside the property fence line and across the County road. The spray will add a final moisture barrier/binder to the debris for the short distance to the CAMU. Transport vehicles will be limited to a maximum 10 miles per hour while both on-site and during transport. Limiting speeds will prevent dust from become airborne during transport and will prevent the kick-up of dust due to rolling tire action.

At the CAMU dump area, a water truck will be placed to lightly mist debris and knock down any dust during the dumping and spreading phase of the debris in the CAMU. Use of water will be kept at a minimum at all times, however, the elimination of dust will be given top priority.

6.4 Dust Suppressant

The primary dust control measure to be used will be water. However, the application of an accepted dust suppressant dispersed from the water trucks or special equipment as a dust suppressant may be required during periods of time that the application of water alone is inadequate for dust control. Dust suppressant product information and MSDSs will be submitted for approval prior to usage and/or application.

6.5 Area Control

URS/CWC will use specific loading areas for each decontamination/demolition removal location to minimize disturbances and control material transfer operations. During the demolition of each structure, URS/CWC will designate a staging and loading area directly adjacent to each structure. Often this area will be within the footprint of the structure being demolished. This staging and loading area, specific to each structure, will be kept constant and will be maintained to control the migration of dust and debris from moving material unnecessarily.

6.6 Water Source

URS/CWC will utilize the exiting the ASARCO provided fill station, adjacent to Upper Lake, as the source of non-potable water to be utilized for dust suppression operations.

6.7 Field Quality Control

URS/CWC Project Staff (i.e., Project Superintendent, Foremen, H&SP) will inspect work areas daily to assess the need for implementation (or additional implementation) of dust control measures.

6.8 Overall Dust Control Application

URS/CWC will control fugitive dust emissions by using the following overall methods:

- Provide dust suppression (water) before, during, and after demolition of a structure, provided it is safe to do so.
- o In cases where structures are to be dropped (stack demolition, elevated structures), URS/CWC will moisten the targeted drop area prior to the demolition of the structure.
- Provide dust control during material sizing and loading operations.
- o Control material drop heights during loading, unloading and material transfer operations.
- o Minimize and control material handling operations.
- On-site vehicular traffic control and haul road maintenance
- If necessary, URS/CWC will apply other approved methods for control of dust during specific procedures.

7.0 WASTE MANAGEMENT PLAN

Prior to and during completion of the 2007 Cleaning & Demolition and CAMU Project, URS/CWC will utilize this Waste Management Plan for the coordination and off-site disposal of the various waste streams to be generated during the decontamination and demolition activities. This plan has been developed to provide guidance, direction and procedures for managing the handling and disposal of hazardous waste solid and liquid waste, as well as non-hazardous wastes, generated as a result of the site cleaning, asbestos abatement, and demolition of the facilities at the East Helena facility. This plan will describe the responsibilities and procedures to be implemented by URS/CWC for the control and disposition of waste at the site.

7.1 Waste Scenarios

During the cleaning and demolition of the 2007 areas, it is expected that a variety of wastes will be generated and that the anticipated waste materials include, but are not limited to, the following categories:

- Asbestos Containing Materials
- Universal Waste (Ballasts, light tubes, HID lamps, batteries, exit signs, etc.)
- Petroleum Hydrocarbons (including fuels and lubricants)
- Poly-Chlorinated Biphenyls (PCBs)
- o Corrosives (Acids, Caustics, etc.)
- Heavy Metal Impacted Solids
- Demolition Debris

The compounds that are included in these categories may occur separately or in combination.

7.2 Description of Solid Waste Disposal Options

For the purposes of disposal disposition, waste generated during the site activities will be subject to the following disposal options:

- Clean steel, tin, and non-ferrous materials for off-site recycling;
- o All other solid waste, whether non-hazardous or hazardous for disposal in the CAMU;
- Friable and Non-Friable Asbestos Containing Waste for disposal in the CAMU;
- Universal Waste for off-site disposal by ASARCO;
- Personal Protective Equipment for off-site disposal by ASARCO; and
- Liquids for recycling or off-site disposal by ASARCO.

7.3 Management of Non-CAMU Waste Streams

During the cleaning and demolition activities, URS/CWC shall containerize and store all hazardous and universal wastes generated as part of the work. URS/CWC shall use containers made of or lined with materials, which will not react with, and are otherwise compatible with, the hazardous waste to be transferred or stored, so that the ability of the container to contain the waste is not impaired.

If a container holding hazardous waste is not in good condition (e.g. severe rusting, apparent structural defects), or if it begins to leak, URS/CWC shall immediately transfer the hazardous waste from the container to a container that is in good condition. URS/CWC shall inspect areas used for hazardous waste storage or transfer at least weekly for leaking containers or aboveground tanks, for deterioration of containers, tanks and the containment systems caused by corrosion. At the current time, URS/CWC anticipates utilizing the Direct Smelt Building or Shop Storage Building for the storage of containerized hazardous and Universal wastes.

Incompatible wastes and materials shall not be placed in the same container or aboveground tank. URS/CWC will handle and manage incompatible waste in such a manner that prevents violent

reactions, generation of uncontrolled fumes, mists, gases and dusts, production of flammable fumes or gases and damage to the integrity of the waste container.

Hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. A container holding a hazardous waste that is incompatible with any waste or other materials transferred or stored nearby in other containers, piles, open tanks, or surface impoundments shall be separated from the other material.

URS/CWC shall store all hazardous waste in containers suitable for transport in accordance with 49 CFR Parts 170 through 179 or the requirements of the transporter, whichever is more stringent. No waste shall be transferred or stored in a manner, which may rupture the container or cause it to leak.

7.4 Labeling of Waste

Proper marking and labeling shall be applied by URS/CWC for all hazardous and non-hazardous waste at the time the waste is placed in the container. Waste that is stored in bulk shall be posted with a sign that bears an appropriate waste label as well as the information required for waste area signs as applicable.

During decontamination activities or as discovered, URS/CWC may encounter waste streams that are placed into containers that are either previously unidentified or the exact waste characterization (i.e., Haz or Non-Haz) is unknown. For those instances, URS/CWC will label the container with a "Non-Classified Waste Material; Laboratory Analysis in Progress" label. This label will identify the material as an uncharacterized waste stream. URS/CWC will indicate on the label where the containerized material came from and if a reasonable amount of information is available, what the suspected waste stream is. Once an unidentified waste stream has been containerized and labeled as indicated above, URS/CWC will propose a sampling scenario for this container(s) as described above in Section 1.4 – Waste Analysis Program.

7.5 Management of CAMU Approved Waste

If the CAMU has not been completed, CAMU waste that is demolished will be staged inside the designated Subpart DD containment structures. Waste material will be transported as previously described and will be dumped into bulk stockpiles. These structures will provide protection from weather, specifically wind and rain. Therefore, inside the structures, materials will not be covered and no erosion control devices will be utilized. If not previously posted, URS/CWC will post warning signs at the entrances of the storage buildings notifying site personnel of the storage of lead and asbestos containing materials.

Once the CAMU is ready to accept material, URS/CWC will begin the loading and transportation of stockpiled waste from the various storage areas into the CAMU. General demolition waste will be loaded with track or rubber-tired loaders and transported via rock trucks in the same manner as that for general demolition operations. Friable asbestos containing waste, that is wrapped and contained, will be loaded, transported, and placed in the CAMU cell in such a manner that the integrity of the wrapping is not breached. At no time will friable material be exposed to the environment. Non-friable asbestos waste that is be placed in the CAMU will be loaded as described above for general

demolition debris. Due to the impacted nature of the CAMU waste, including both asbestos and lead containing waste, URS/CWC will strictly enforce the dust control measures as described above.

7.6 Waste Management Quality Control

Waste management quality control will be accomplished through the use of administrative, engineering, and physical controls that will include, but not be limited to the following:

- Routine inspections of waste storage areas;
- Curtailing of work activities during high wind conditions (over 15 MPHs average hourly rate);
- Curtailing of waste handling and transport during rain events with enough volume to create run-off:
- Pre-identification and handling of waste requiring special management; and
- Decontamination of equipment used to handle waste.

Inspections

URS/CWC shall implement inspection procedures to address potential deficiencies related to the waste storage areas. URS/CWC shall conduct, at least weekly, inspections of the areas designated for container storage, or transfer. URS/CWC shall inspect the area for evidence of deterioration of containers and secondary containment areas. Additionally, inspection of container labeling and accumulation dates will be completed to ensure that all containers are properly and legibly labeled and that no containers will or are close to exceeding the on-site storage date. URS/CWC will inspect containers and storage areas to ensure that they are not, have not, and will not be susceptible to any weather event that could cause release of a hazardous waste stream onto the site or into the storm water system.

Work Stoppage

URS/CWC shall halt work when weather conditions are such that the spread of contaminated dust and debris is likely. These conditions typically exist when there is excessive wind and/or rain. Therefore, if wind with 15 MPH average hourly rate or more evolve, URS/CWC will halt the handling of waste to prevent dust and debris from becoming airborne due to the waste management process. Furthermore, if a rain event begins, URS/CWC personnel will evaluate the site conditions. If the rain is such that no run-off is occurring, work activities will proceed uninhibited. In the event that the rain is of such volume that run-off is beginning to occur and the work activities in progress (i.e., dust cleaning, demolition of a contaminated area) could create a contaminated run-off, work will cease until such time that a run-off potential is not present. URS/CWC will evaluate these conditions with ASARCO representatives.

Special Waste Handling and Segregation

Prior to demolition activities, URS/CWC will ensure that all waste requiring special handling have been removed from the structures to be demolished. Special wastes shall consist of asbestos containing wastes, universal waste, and liquid wastes. Universal and liquid wastes will have removed the structures, handled, and stored as Non-CAMU wastes defined above. Asbestos containing waste that will be placed in the CAMU will be segregated as it is abated. If the CAMU is not complete and ready for waste placement, the asbestos waste will be temporarily stored. Non-friable waste will be stored south of the Bailey Coverall Building as space permits in a manner that will not accumulate

precipitation on its exterior. Friable wastes will be properly bagged/wrapped and labeled and will be placed in the Direct Smelt Bldg., alongside the existing 2006 asbestos waste, for eventual placement into the CAMU.

Decontamination of Equipment

URS/CWC will provide for the decontamination of equipment used in the handling and/or transport of demolition debris prior to the equipment leaving the site, or moving from a demolition zone to an area considered clean. URS/CWC will establish a decontamination pad, in an area agreed with and approved by ASARCO. This decontamination pad may change location dependent upon demolition activities and the evolution of the project site. This decontamination pad will be on concrete slab suitable for placement of heavy equipment.

Decontamination will consist of one or a combination of the following: brushing, vacuuming, or washing methods. The goal of the decontamination is to remove heavy metal laden bearing dust and debris from the areas of the equipment that came into contact with this waste. Upon completion of the decon activity, any removed dust and debris will be picked up and placed into storage for eventual placement into the CAMU.

Equipment that has been decontaminated will be inspected upon completion to ensure the adequacy of the process and to document the process to ensure quality control.

8.0 CONSTRUCTION OF CORRECTIVE ACTION MANAGEMENT UNIT

8.1 CAMU Earthwork

Construction of the Corrective Action Management Unit (CAMU) will be completed in a phased manner per the requirements of the Project Specifications. URS will employ the services of both a grading subcontractor and a liner installation subcontractor to complete the CAMU. Prior to the start of earthwork operations, URS/CWC and it's subcontractor will install the requisite erosion control and security fencing per Sheet 25 of the Construction Drawings. The erosion control fencing will consist of Mirafi "EnviroFence" anchored by wood or steel posts, with the bottom section being placed and backfilled in a 6" deep by 6" wide trench. As security and safety fencing, an orange poly fence, approximately 4' high, will be installed on the same posts.

Across the uphill area of the CAMU construction site, a temporary run-on diversion ditch will be excavated to prevent storm waters from entering the grading area. In general, URS/CWC and it's subcontractor will conduct a mass excavation, grading, and screening project to effectively remove topsoils, subsoils, clay rich soils, and other miscellaneous soils. URS will utilize a combination of scrappers, rubber tired loaders, and excavators, to conduct these activities.

At the beginning of the excavation operation, URS/CWC will coordinate with ASARCO's Geotechnical Engineer to ensure the proper identification of the on-site clay materials. Limits of this clay material will be determined the Engineer and agreed upon by ASARCO and URS/CWC to ensure quality control. During the excavation phase and once the clay layer has been found, the excavated clay to be utilized in the construction of the compacted clay liner will be screened. As these materials are excavated

and/or screened, they will be placed in the designated stockpiles locations for future use. The approved Design Analysis Report will serve as guidance in performing the CAMU earthwork.

8.2 CAMU Liner Installation

URS will utilize the services of a subcontractor, Northwest Linings & Geotextile Products, Inc., for the installation of the CAMU liner system. The approved Design Analysis Report will serve as guidance in performing the CAMU liner installation (Attachment D).

8.3 Placement of Debris into the CAMU

Debris will be hauled from the various work areas, the concentrate storage and handling building, the Coverall Buildings, and the Direct Smelt Building as described in the following section. URS will utilize a track loader to spread the material and track roll the lift to as firm as condition as the material will allow and is possible. Dumping will begin at the uphill end of the CAMU and work progressively downhill. URS will place access ramps at the northern and western corners of the CAMU to facilitate vehicle access. This process will progress until all available waste has been placed or until CAMU temporary closure is reached. The approved Design Analysis Report will serve as guidance for placement of the debris in the CAMU. Asbestos containing wastes from the 2006 and 2007 Demolition activities will be placed in the southern corner of the CAMU and will be placed within in the first lift to the maximum extent possible. This will be completed so that the location of this asbestos waste will be easily mapped and recorded.

During the CAMU waste placement process, URS will continually monitor weather conditions for the forecast of rain. The approved Design Analysis Report will serve as guidance in monitoring and reacting to weather conditions.

8.4 Temporary CAMU Cover

Upon completion of the debris placement into the CAMU, or when the decision is made by ASARCO and URS/CWC to secure the CAMU for winter, URS/CWC and its liner subcontractor will begin installation of the temporary CAMU cover. The approved Design Analysis Report will serve as guidance for installing the CAMU temporary cover.

ATTACHMENT A

CONSTRUCTION DOCUMENT DRAWINGS



ASARCO LLC EAST HELENA PLANT

2007 CLEANING & DEMOLITION PROJECT AND CAMU PHASE 2 CELL PROJECT

JANUARY 2007

DWG. NO.	TITLE
SENERA	AL SHEETS
1	DRAWING INDEX & VICINITY MAP
2	ASARCO EQUIPMENT LOCATION MAP
3	WASTE LOCATION MAP
4	ASBESTOS SURVEY LOCATION MAP
5	ACTIVE UTILITIES
6	UNDERGROUND UTILITIES ABANDONED
7	UNDERGROUND UTILITIES TO BE FLOW FILLED
DEMOLI	TION PHASE IV PLAN SHEETS
8	DEMOLITION PHASE IV - PLAN
9	DEMOLITION PHASE IV - STAGE 1
10	DEMOLITION PHASE IV - STAGE 2 - PART 1
11	DEMOLITION PHASE IV - STAGE 2 - PART 2
12	DEMOLITION PHASE IV - STAGE 1 & 2
13	DEMOLITION PHASE IV - STAGE 2 & ADDITIVE ALTERNATIVE "A"
14	DEMOLITION PHASE IV - ADDITIVE ALTERNATIVE "A" & "B"
EMPOR	RARY CAP PLAN SHEETS
15	TEMPORARY CAP PHASE IV - PLAN
16	TEMPORARY CAP PHASE IV - STAGE 1
17	TEMPORARY CAP PHASE IV - STAGE 2 - PART 1
18	TEMPORARY CAP PHASE IV - STAGE 2 - PART 2
19	TEMPORARY CAP PHASE IV - STAGE 2 - PART 3
20	TEMPORARY CAP PHASE IV - STAGE 2 & ADDITIVE ALTERNATIVE "A"
21	TEMPORARY CAP PHASE IV - ADDITIVE ALTERNATIVE "A" & "B"
22	DETAILS
23	DETAILS
CAMILE	HASE 2 PLAN SHEETS
24	WASTE STOCKPILES AND HAUL ROUTES
25	EXCAVATION SITE PLAN
26	EROSION CONTROL PLAN - WASTE PLACEMENT PHASE
27	EROSION CONTROL PLAN - WASTE PLACEMENT PHASE
28	CROSS SECTIONS
29	LEACHATE DETECTION, COLLECTION, AND REMOVAL SYSTEM SECTIONS AND DETAILS
30	CAP AND BOTTOM LINER DETAILS
31	FINISHED GRADE PLAN WITH GAS VENT LOCATIONS AND DETAILS
32	RUNOFF CONTROL POND PLAN AND RIPRAP SLOPE DRAIN DETAILS
	I KONOLI GOMINOL FOMD FLAM AND KIFKAP SLUFE DRAIN DETAILS

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CHECKED BY MWR 1/23/07

APPROVED BY MJO 1/24/07

Hydrometrics, Inc. Consulting Scientists and Engineers

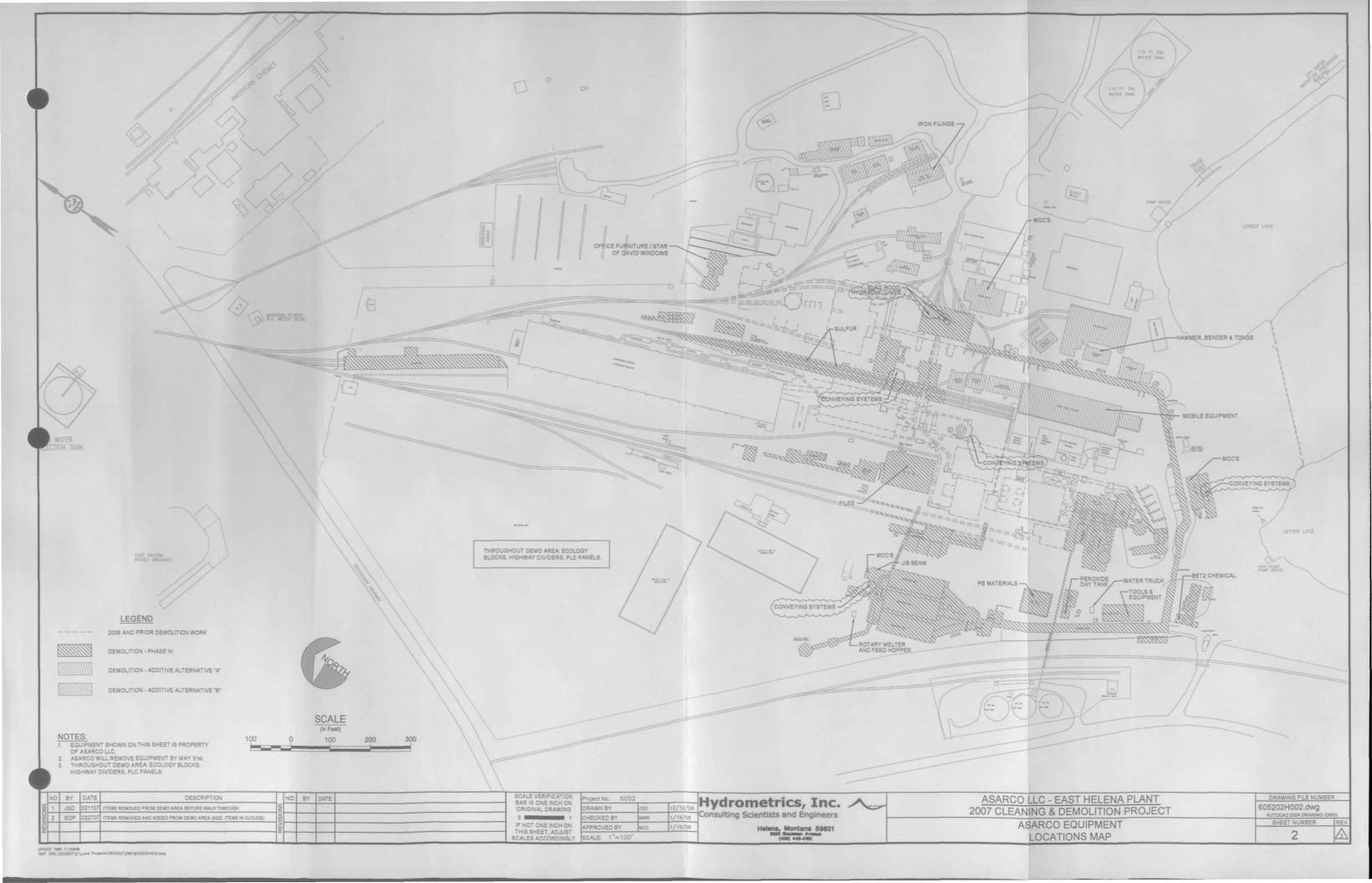
ASARCO LLC - EAST HELENA PLANT
2007 CLEANING & DEMOLITION PROJECT AND CAMU PHASE 2 CELL PROJECT
DRAWING INDEX &
VICINITY MAP

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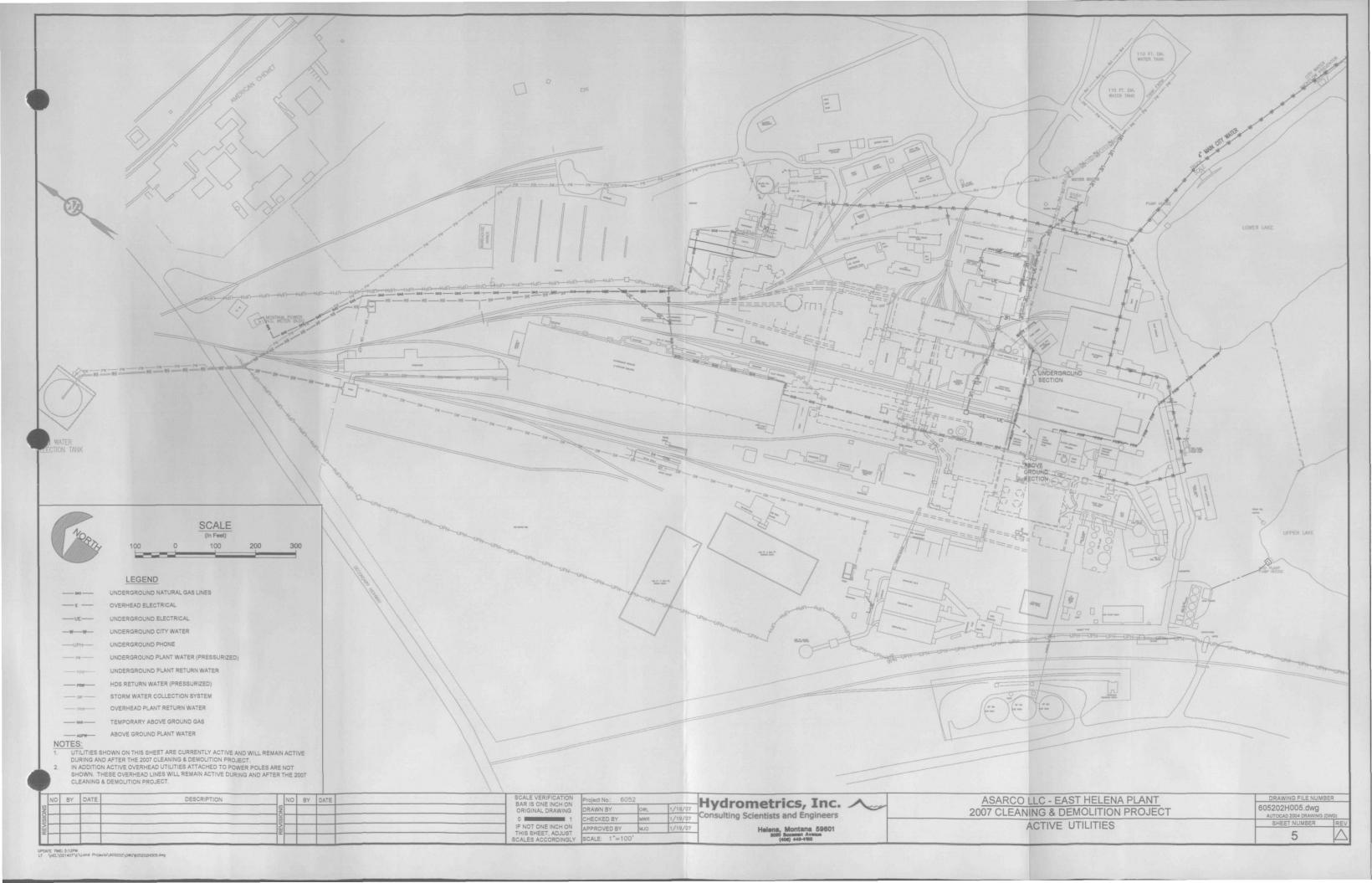
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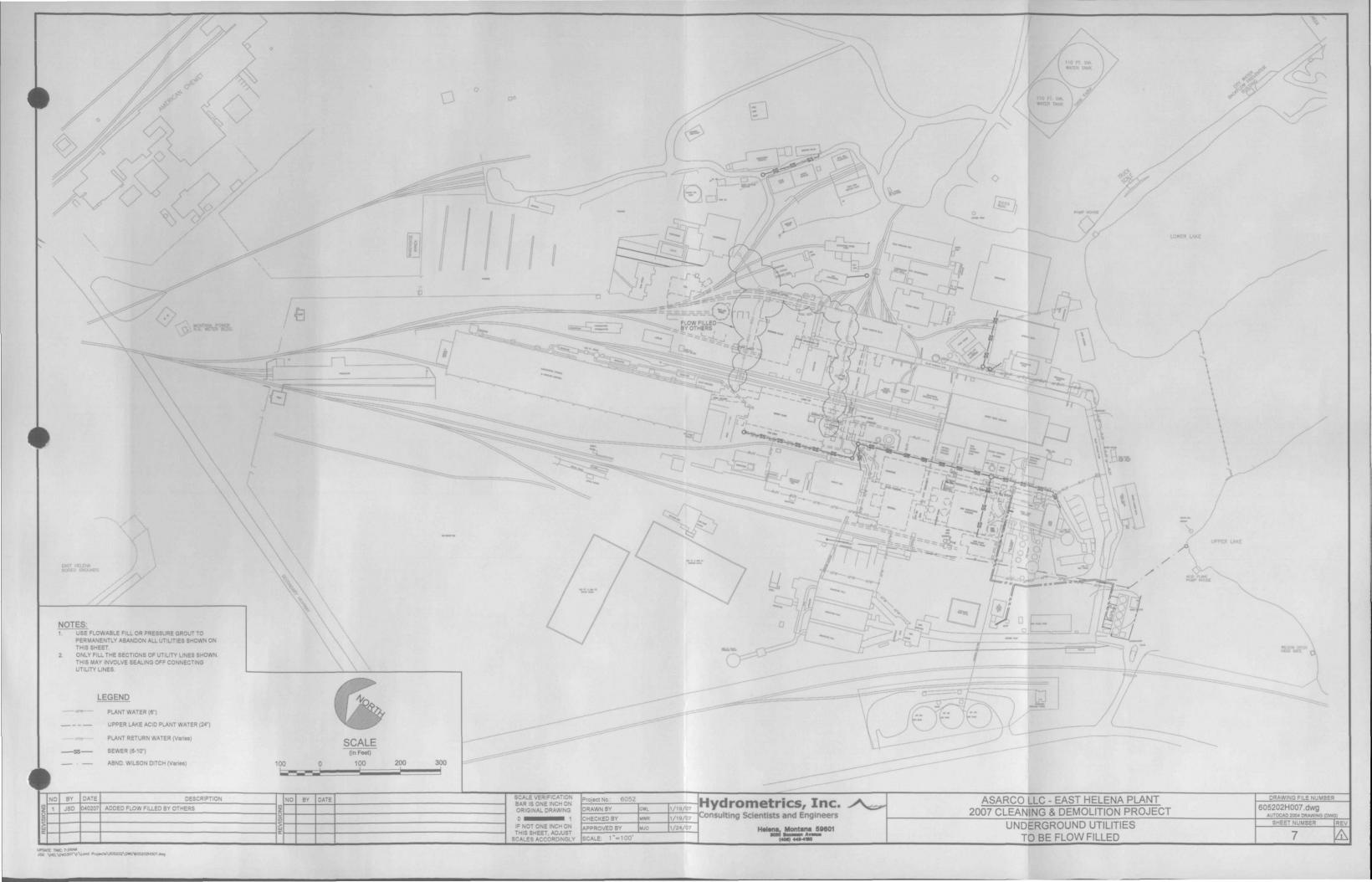




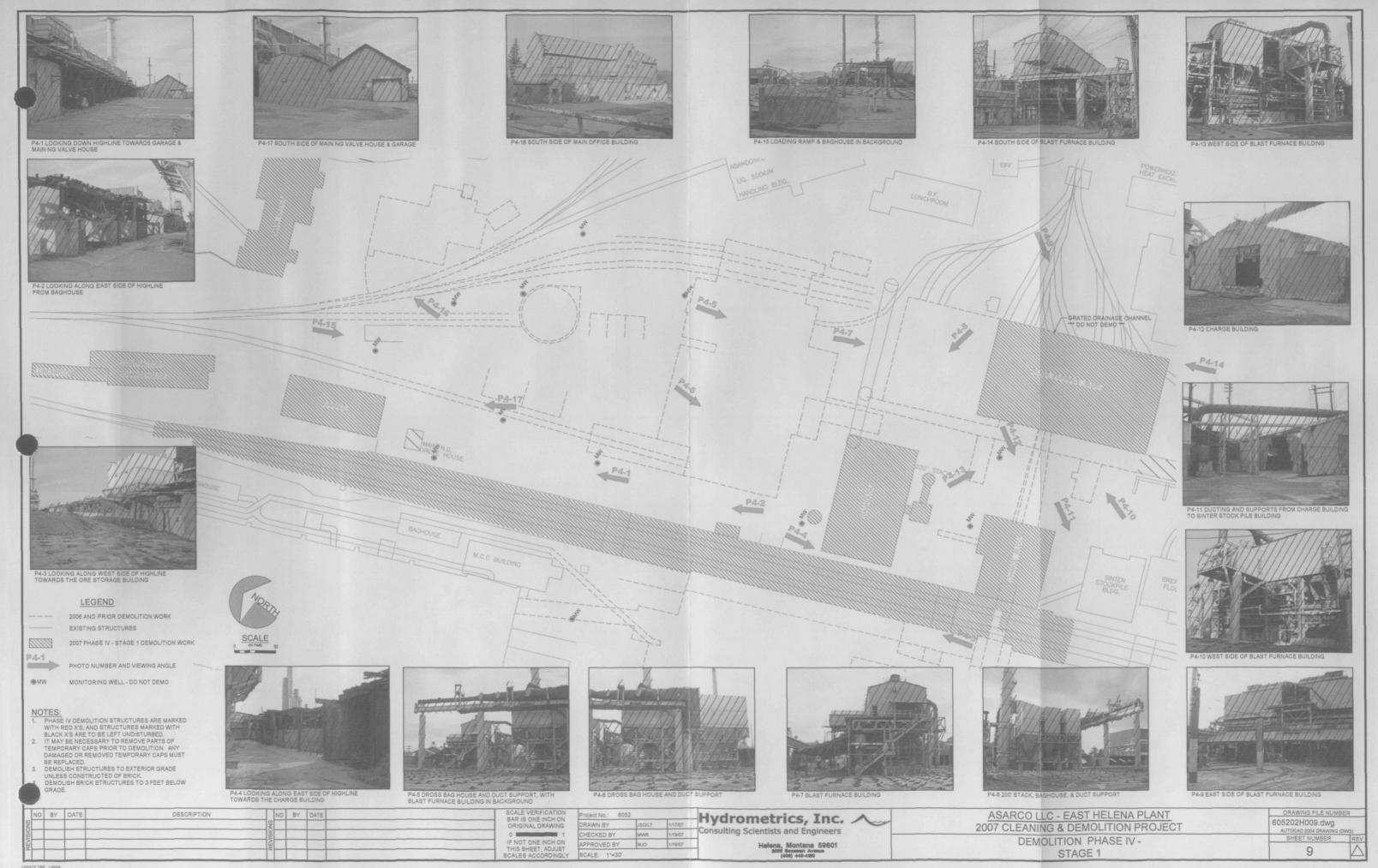


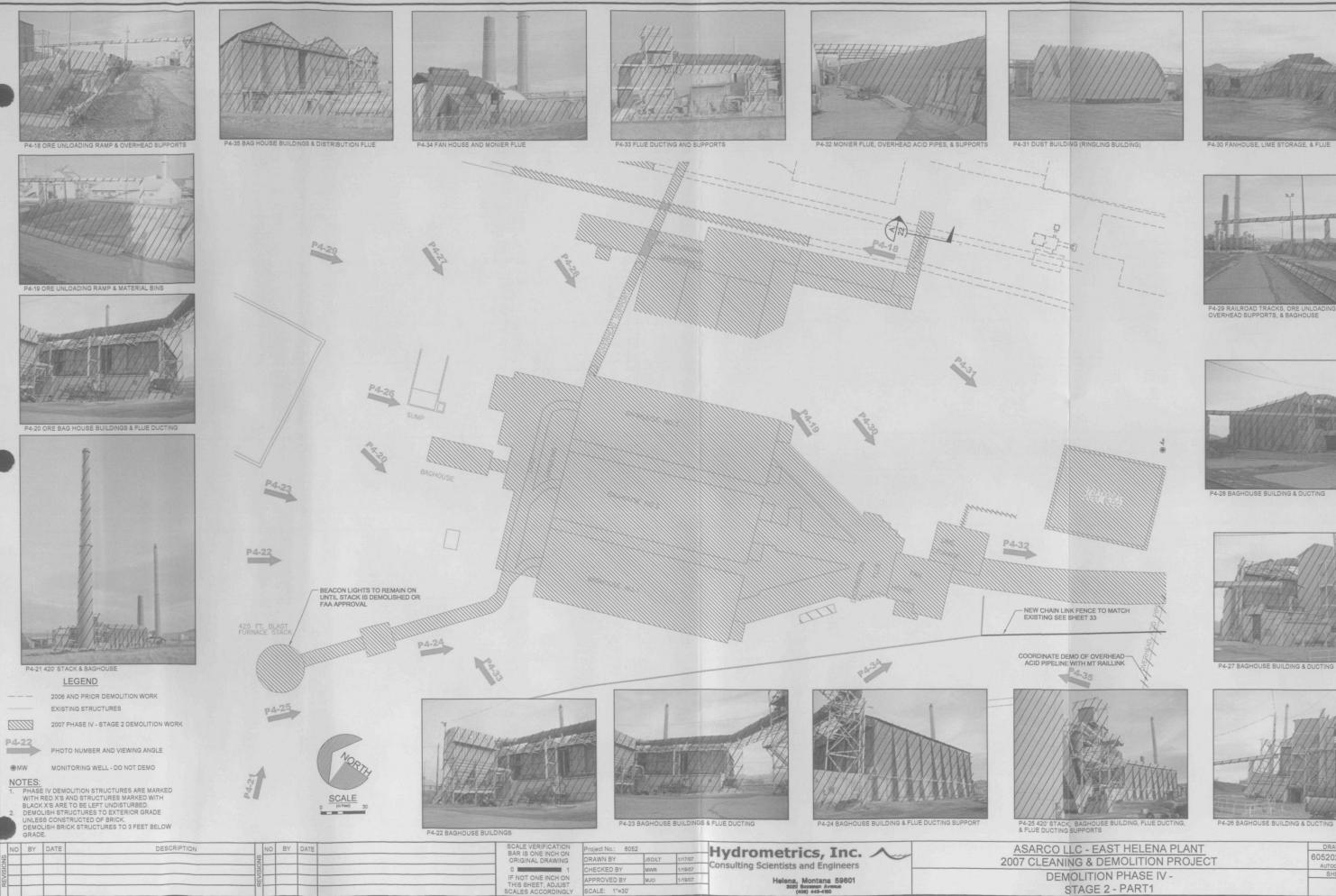








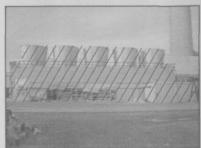




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P4-36 MONIER FLUE & TRAILER





P4-38 ACID PLANT, MAIN BLOWER BUILDING, & STACKS



LEGEND

2006 AND PRIOR DEMOLITION WORK EXISTING STRUCTURES

2007 PHASE IV - STAGE 2 DEMOLITION WORK



PHOTO NUMBER AND VIEWING ANGLE

@MW MONITORING WELL - DO NOT DEMO

NOTES:

1. PHASE IV DEMOLITION STRUCTURES ARE MARKED WITH RED X'S AND STRUCTURES MARKED WITH BLACK X'S ARE TO BE LEFT UNDISTURBED.

2. IT MAY BE NECESSARY TO REMOVE PARTS OF TEMPORARY CAPS PRIOR TO DEMOLITION. ANY DAMAGED OR REMOVED TEMPORARY CAPS MUST BE REPLACED.

DEMOLISH STRUCTURES TO EXTERIOR GRADE UNLESS CONSTRUCTURED OF BRICK. DEMOCISH BRICK STRUCTURES TO 3 FEET BELOW GRADE.











P4-43 ACID PLANT, AUTO SHOP, & 200' STACK









P4-48 SPRAY DRYER BUILDING & TRUCK LOADING BUILDING



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NEW CHAIN LINK FENCE SEE SHEET 33

Project No.: 6052			Hydrometrics, Inc.	
	DRAWN BY	JSD/LT	1/17/07	
	CHECKED BY	MWR	1/19/07	Consulting Scientists and Engineers
	APPROVED BY	MJO	1/19/07	Helena, Montana 59601
	SCALE: 1"=30"			3020 Bozeman Avenue (408) 443-4160

ASARCO LLC - EAST HELENA PLANT 2007 CLEANING & DEMOLITION PROJECT DEMOLITION PHASE IV -STAGE 2 - PART 2

605202H011.dwg 11



P4-50 NORTH SIDE OF CRUSHING MILL



P4-51 CRUSHING MILL & SUPPORT STRUCTURES







2006 AND PRIOR DEMOLITION WORK

2007 PHASE IV - STAGE 1 & 2 DEMOLITION WORK

P4-63

PHOTO NUMBER AND VIEWING ANGLE

●MW MONITORING WELL - DO NOT DEMO

NOTES:

1. PHASE IV DEMOLITION STRUCTURES ARE MARKED WITH RED X'S AND STRUCTURES MARKED WITH BLACK X'S ARE TO BE LEFT UNDISTURBED.

2. IT MAY BE NECESSARY TO REMOVE PARTS OF TEMPORARY CAPS PRIOR TO DEMOLITION. ANY DAMAGED OR REMOVED TEMPORARY CAPS MUST BE REPLACED.

DEMOLISH STRUCTURES TO EXTERIOR GRADE UNLESS CONSTRUCTED OF BRICK.

DEMOLISH BRICK STRUCTURES TO 3 FEET BELOW GRADE.



NEW CHAIN LINK FENCE— SEE SHEET 33





CRUSHING & SAMPLE MILL - STAGE 2 DEMOLITION

THAWHOUSE - STAGE 1 DEMOLITION



-EXISTING CONCRETE DRAINAGE DITCH
*** DO NOT DEMO ***

AWHOUSE INCLUDES: 6 GONDALES, 1 FLAT CAR, &—1-45' GE LOCOMOTIVE TO BE INCLUDED IN DEMO

P4-57 EAST SIDE OF SAMPLE MILL & DUST LOAD OUT



EXISTING RETAINING WALL



P4-63 NORTH SIDE OF THAWHOUSE







P4-60 CRUSHING MILL & STORAGE BUILDING



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CHECKED BY	MWR	1/19/07	Consulting Scientists and Engineers
APPROVED BY	MJO	1/19/07	Helena, Montana 59601
00415 41-201			3020 Bozeman Avenue

ASARCO LLC - EAST HELENA PLANT	DRAWING FILE NUMB
	605202H012.dwg
2007 CLEANING & DEMOLITION PROJECT	AUTOCAD 2004 DRAWING (I
DEMOLITION PHASE IV -	SHEET NUMBER
STAGE 1 & STAGE 2	12







P4-83 BLAST FURANCE OFFICE & LOCOMOTIVE CRANE SHED





2006 AND PRIOR DEMOLITION WORK

MONITORING WELL - DO NOT DEMO

2007 ADDITIVE ALTERNATIVE "A" DEMOLITION WORK 2007 ADDITIVE ALTERNATIVE "B" DEMOLITION WORK

LEGEND

PHOTO NUMBER AND VIEWING ANGLE

⊚MW





















P4-91 MEETING ROOM BUILDING







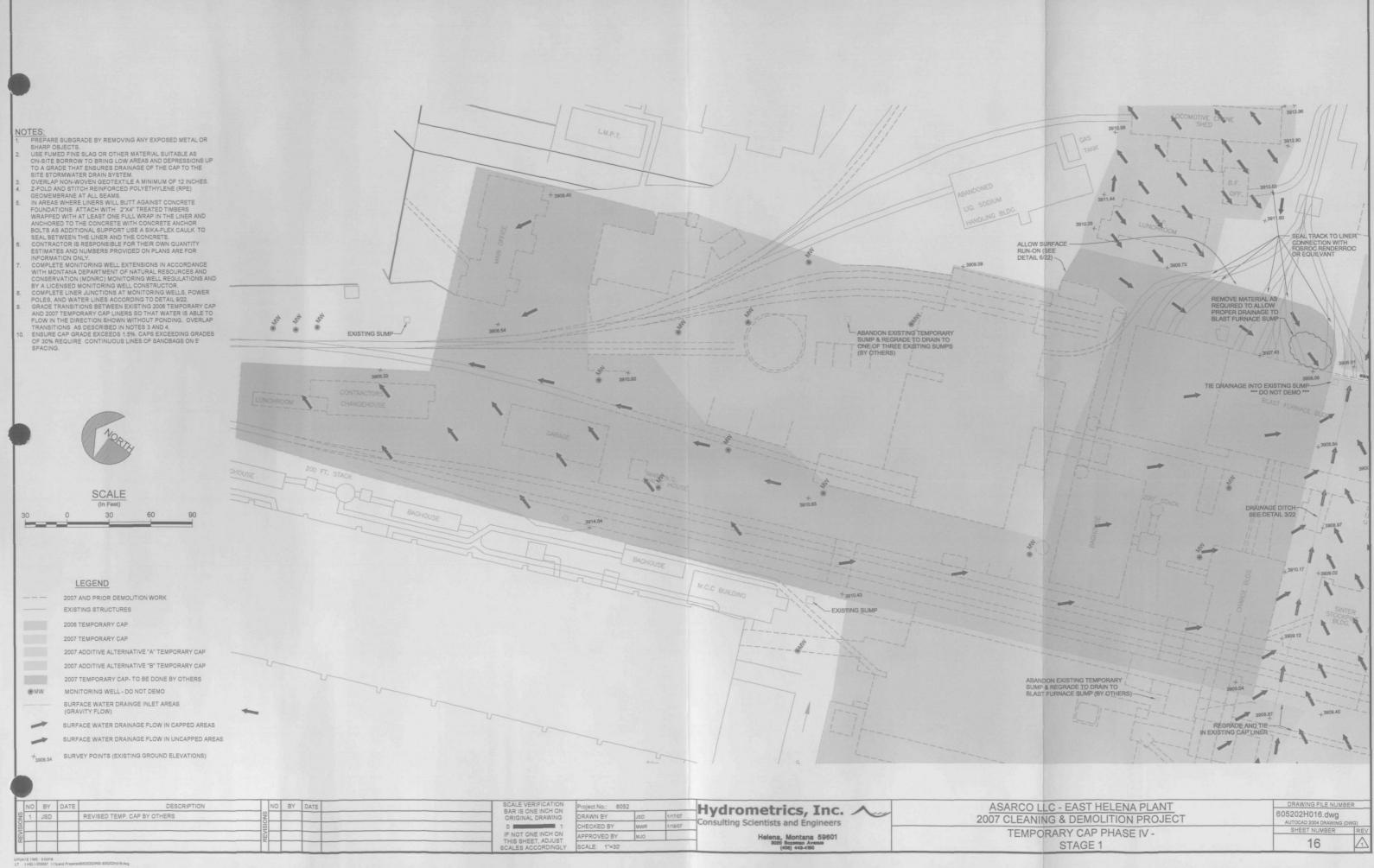
NOTES:

1. PHASE IV ALTERNATIVE "A" DEMOLITION STRUCTURES ARE MARKED WITH BLUE X'S, ADDITIVE ALTERNATIVE "B" STRUCTURES ARE MARKED WITH GREEN X'S, AND STRUCTURES MARKED WITH BLACK X'S ARE TO BE LEFT P4-88 TRESTLE, MOTOR STORAGE, & COAL MILL FOUNDATION DESCRIPTION Hydrometrics, Inc. Consulting Scientists and Engineers

ASARCO LLC - EAST HELENA PLANT 2007 CLEANING & DEMOLITION PROJECT DEMOLITION PHASE IV -ADDITIVE ALTERNATIVE "A" & "B"

605202H014.dwg 14











NOTES:

1. PREPARE SUBGRADE BY REMOVING ANY EXPOSED METAL OR SHARP OBJECTS.

2. USE FUMED FINE SLAG OR OTHER MATERIAL SUITABLE AS ON-SITE BORROW TO BRING LOW AREAS AND DEPRESSIONS UP TO A GRADE THAT ENSURES DRAINAGE OF THE CAP TO THE SITE STORMWATER DRAIN SYSTEM.

3. OVERLAP NON-WOVEN GEOTEXTILE A MINIMUM OF 12 INCHES.

4. Z-FOLD AND STITCH REINFORCED POLYETHYLENE (RPE) GEOMEMBRANE AT ALL SEAMS.

5. IN AREAS WHERE LINERS WILL BUTT AGAINST CONCRETE FOUNDATIONS ATTACH WITH 2"X4" TREATED TIMBERS WRAPPED WITH AT LEAST ONE FULL WRAP IN THE LINER AND ANCHORED TO THE CONCRETE WITH CONCRETE ANCHOR BOLTS AS ADDITIONAL SUPPORT USE A SIKA-FLEX CAULK TO SEAL BETWEEN THE LINER AND THE CONCRETE.

6. CONTRACTOR IS RESPONSIBLE FOR THEIR OWN QUANTITY ESTIMATES AND NUMBERS PROVIDED ON PLANS ARE FOR INFORMATION ONLY.

7. COMPLETE MONITORING WELL EXTENSIONS IN ACCORDANCE WITH MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (MONRC) MONITORING WELL REGULATIONS AND BY A LICENSED MONITORING WELL CONSTRUCTOR.

6. COMPLETE LINER JUNCTIONS AT MONITORING WELLS, POWER POLES, AND WATER LINES ACCORDING TO DETAIL 9/22.

9. GRADE TRANSITIONS BETWEEN EXISTING 2006 TEMPORAY CAP AND 2007 TEMPORARY CAP LINERS SO THAT WATER IS ABLE TO FLOW IN THE DIRECTION SHOWN WITHOUT PONDING. OVERLAP TRANSITIONS AS DESCRIBED IN NOTES 3 AND 4.

10. ENSURE CAP GRADE EXCEEDS 1.5%, CAPS EXCEEDING GRADES OF SANDBAGS ON 5' SPACING.

NOTES:

1. PREPARE SUBGRADE BY REMOVING ANY EXPOSED METAL OR

SCALE

LEGEND

2007 AND PRIOR DEMOLITION WORK

EXISTING STRUCTURES

2006 TEMPORARY CAP 2007 TEMPORARY CAP

2007 ADDITIVE ALTERNATIVE "A" TEMPORARY CAP

MONITORING WELL - DO NOT DEMO

SURFACE WATER DRAINGE INLET AREAS

SURFACE WATER DRAINAGE FLOW IN CAPPED AREAS

SURFACE WATER DRAINAGE FLOW IN UNCAPPED AREAS

SURVEY POINTS (EXISTING GROUND ELEVATIONS)

NO BY DATE NO BY DATE DESCRIPTION

STAGE 1 & 2

19



NO BY DATE DESCRIPTION	NO BY DATE	SCALE VERIFICATION	Project No.: 6052			Hydrometrics, Inc.	ASARCO LLC - EAST HELENA PLANT	DRAWING FILE NUMBER
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CITY WATER HYDRANT

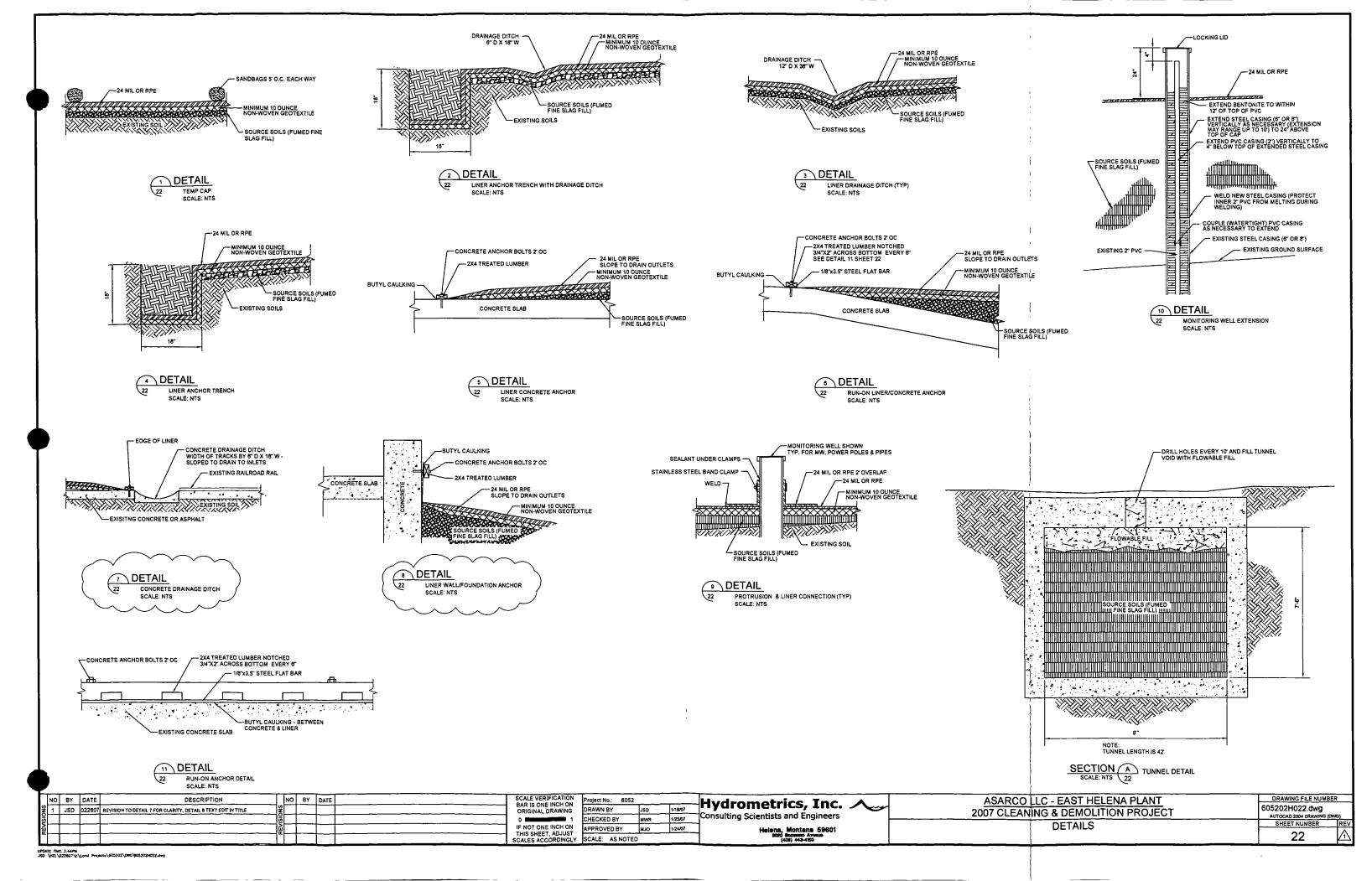


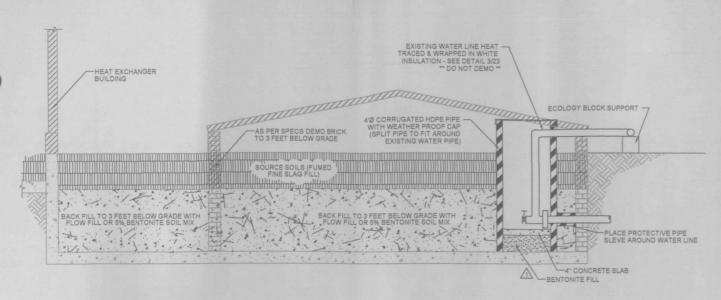
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EXISTING STRUCTURES

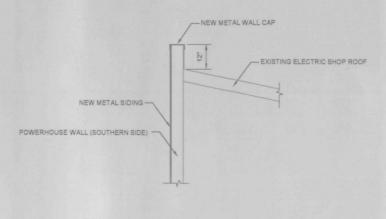




SECTION B PUMP HOUSE ABANDONMENT



3 DETAIL
23 PUMPHOUSE WATER LINE
SCALE: NTS



DETAIL 23 POWERHO POWERHOUSE WALL CAPPING SCALE: NTS



5 DETAIL 23 4'Ø - 14 1/2' DEEP SUMP SCALE: NTS

BY 14 1/2' DEEP SUMP - DEMOLISH TO GRADE & FILL WITH FLOW FILL

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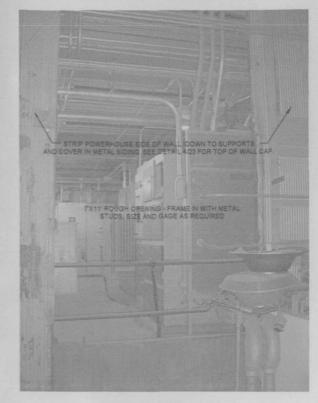
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APPROVED BY	MJO	1/24/07

Hydrometrics, Inc. ^ Consulting Scientists and Engineers

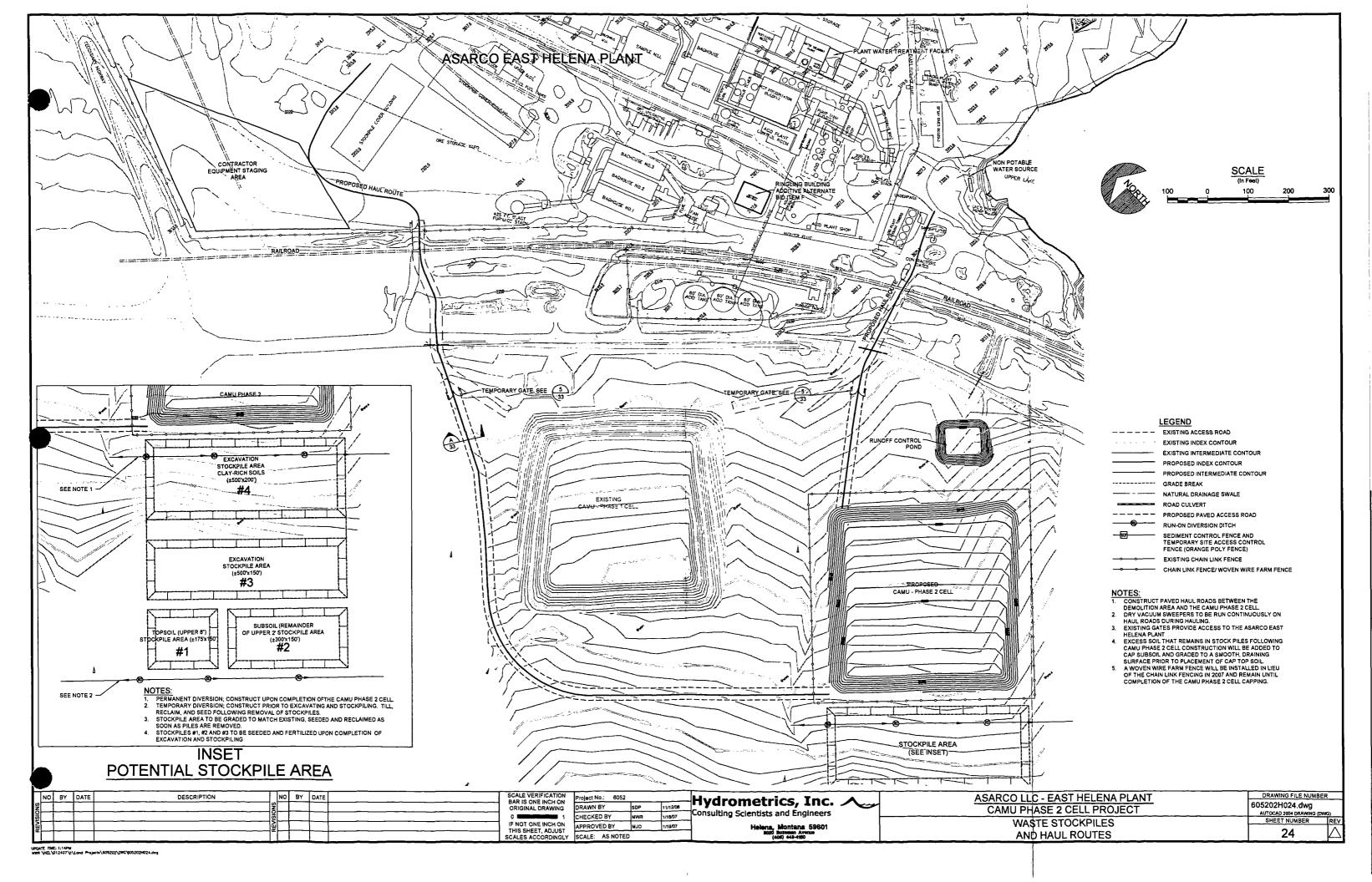
ASARCO LLC - EAST HELENA PLANT 2007 CLEANING & DEMOLITION PROJECT DETAILS

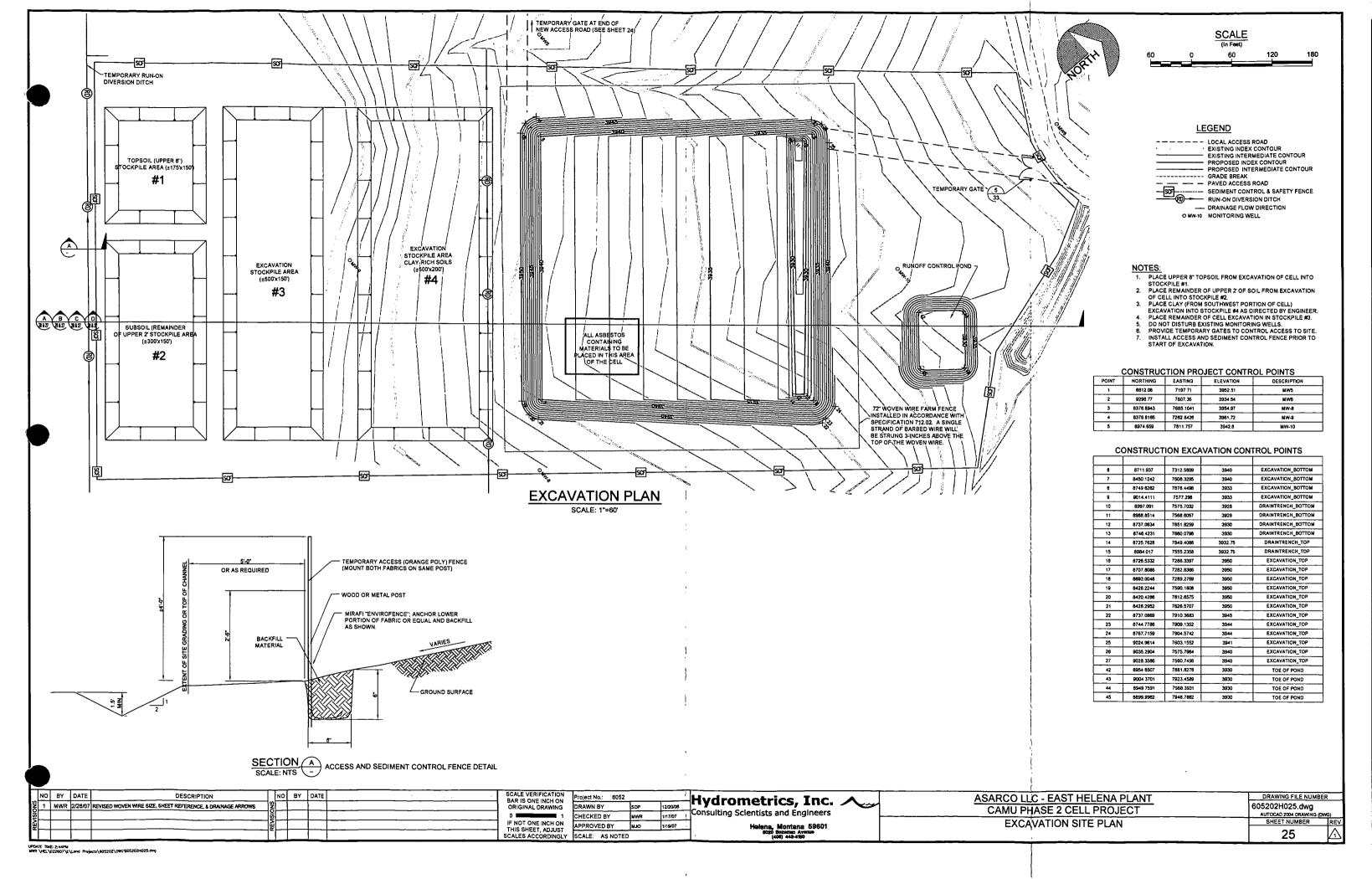
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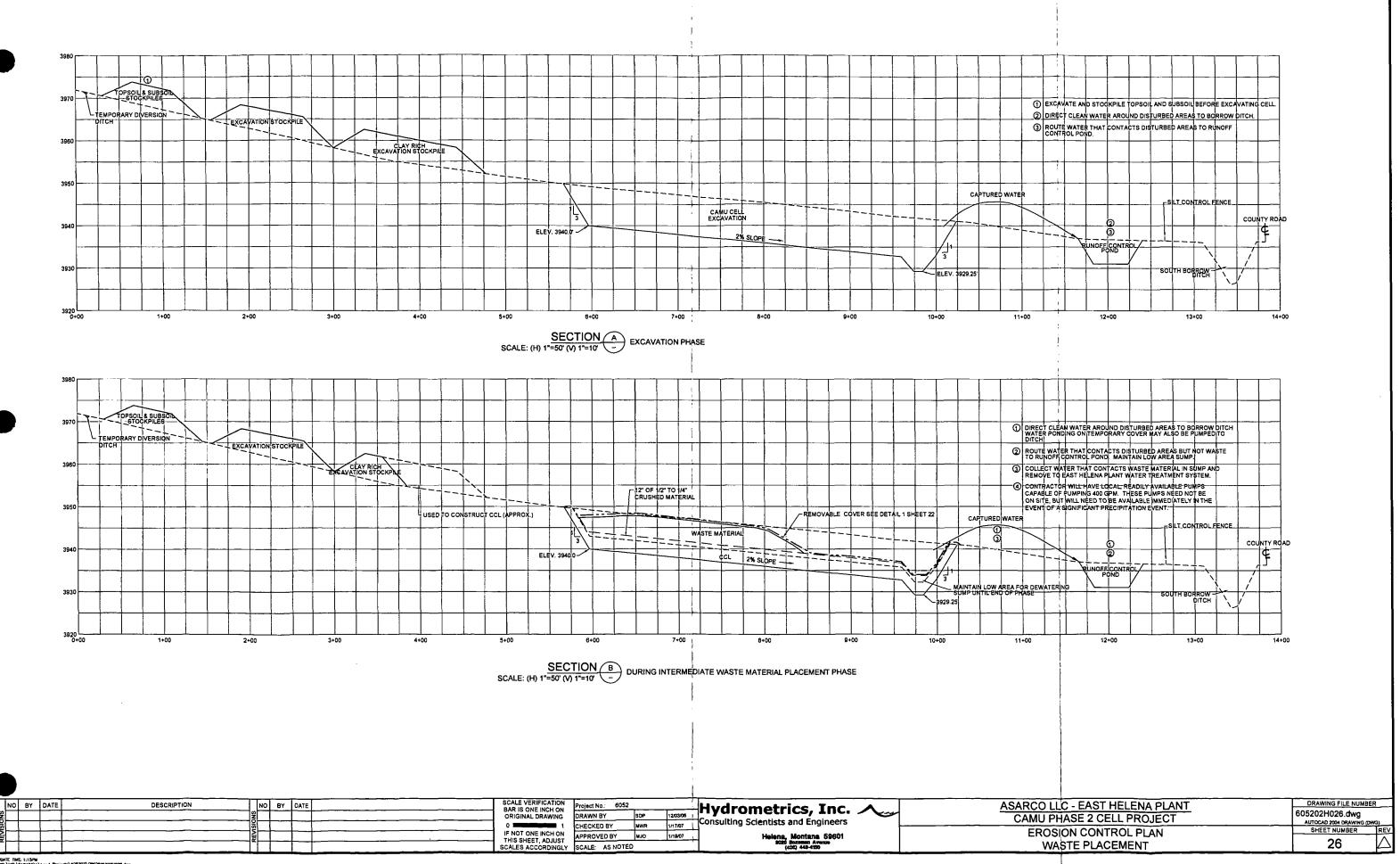
1 DETAIL
23 POWERHOUSE WALL
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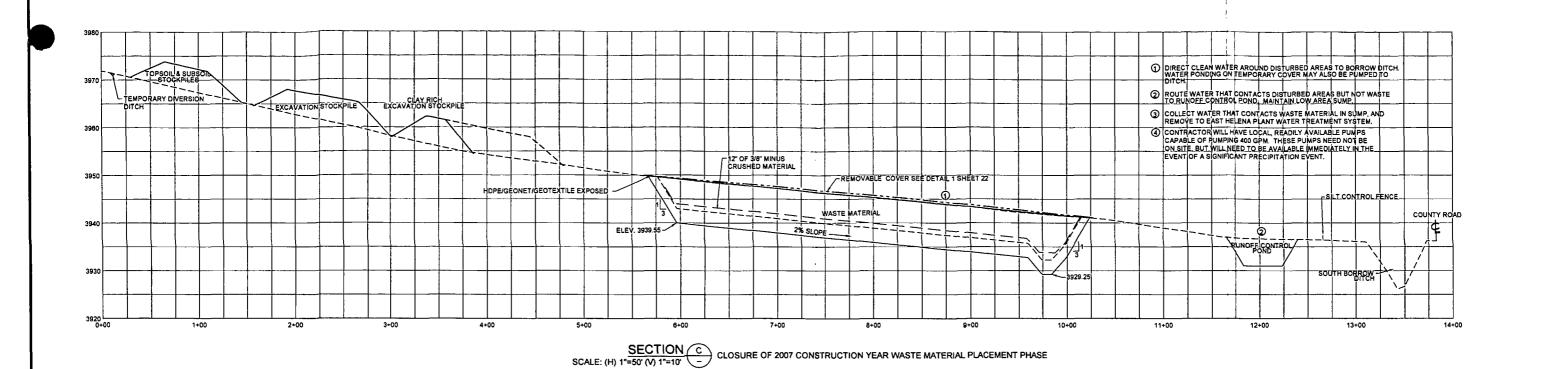


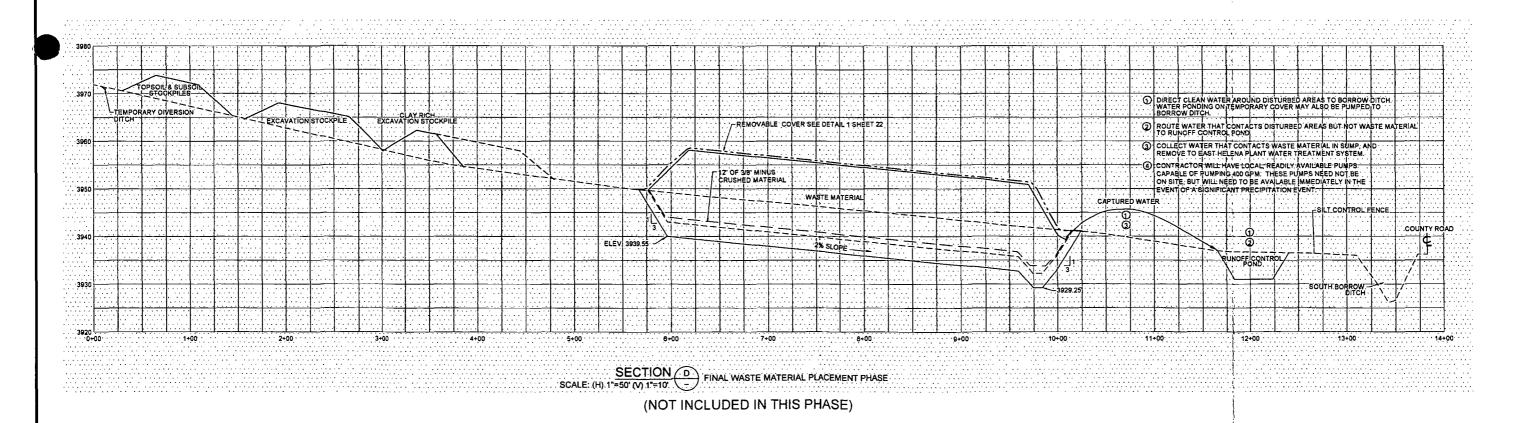
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23 POWERHOUSE WALL
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ASARCO LLC - EAST HELENA PLANT CAMU PHASE 2 CELL PROJECT

EROSION CONTROL PLAN

WASTE PLACEMENT

DRAWING FILE NUMBER

AUTOCAD 2004 DRAWING (DWG

605202H027.dwg

SHEET NUMBER

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APPROVED BY

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1/17/07

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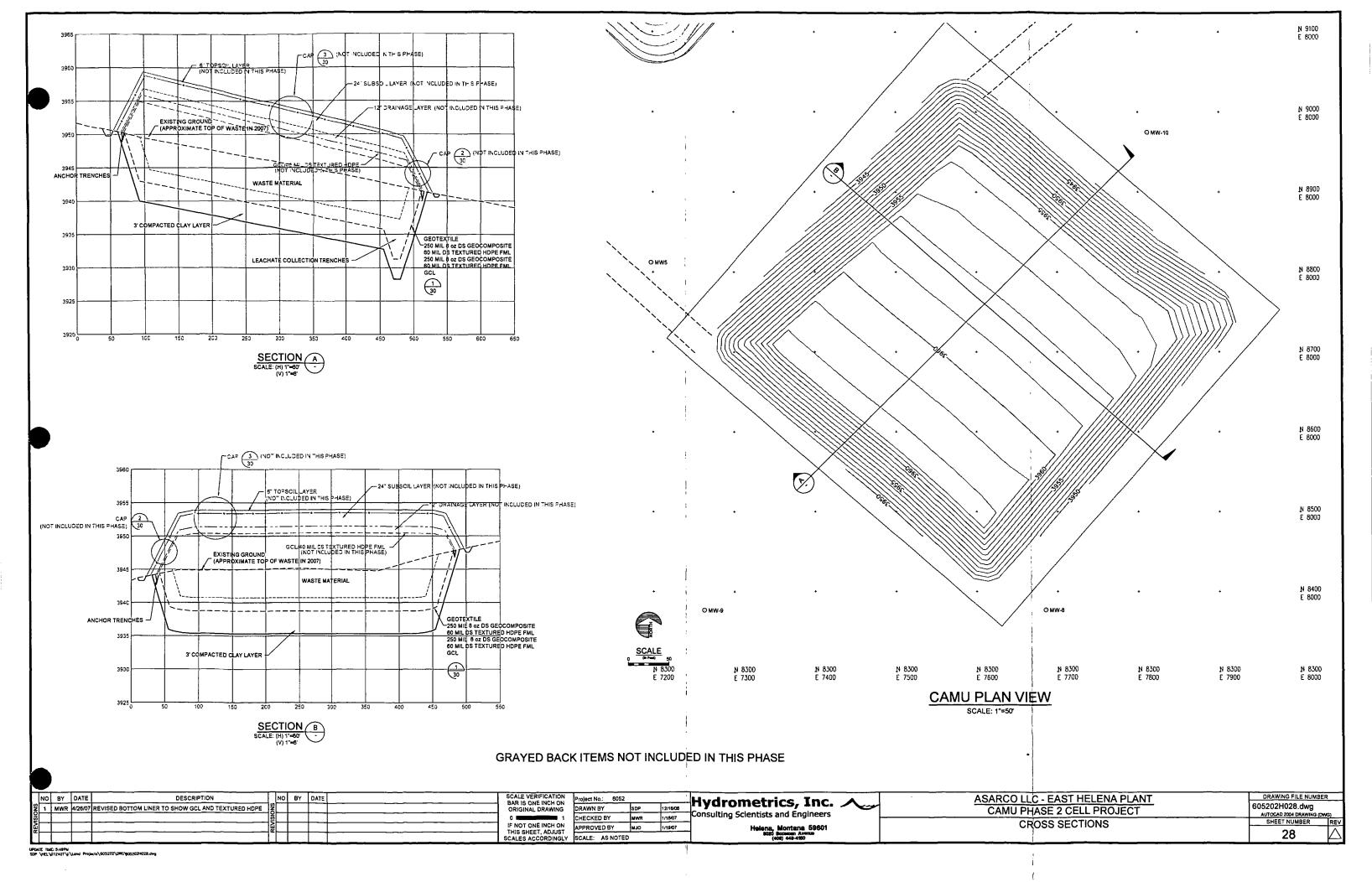
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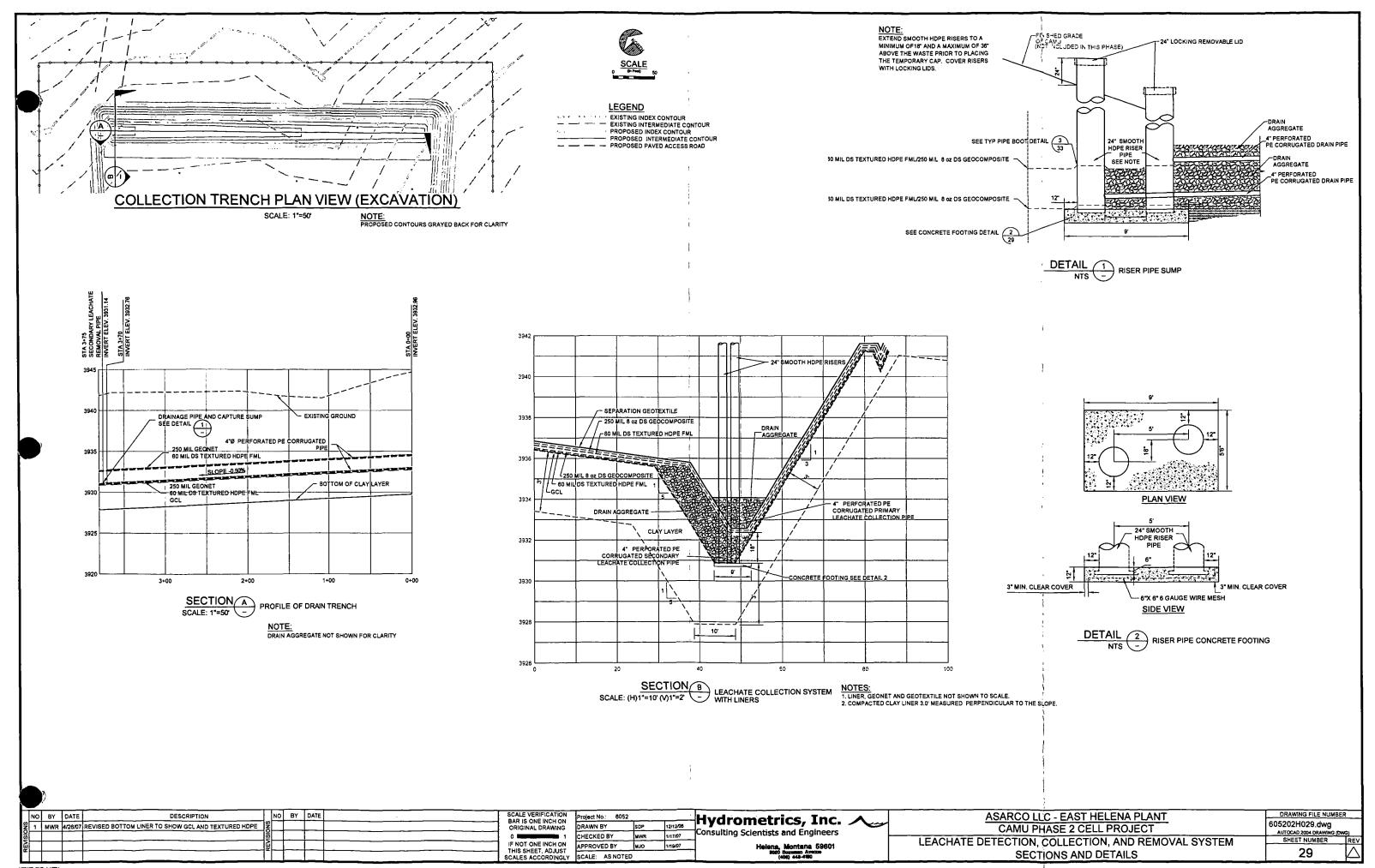
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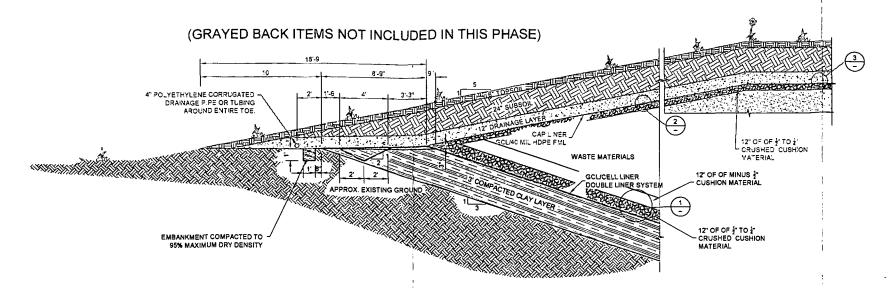
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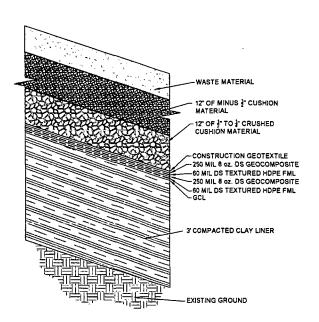
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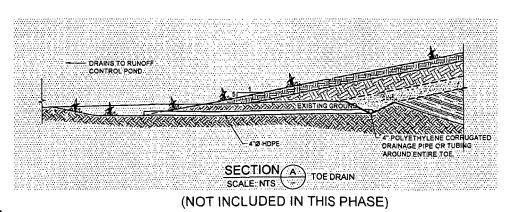




TYPICAL SECTION OF COMPLETED CAMU PHASE 2 CELL







24" SUBSOIL

12" DRAINAGE LAYER

40 MIL DS TEXTURED HOPE FMIL

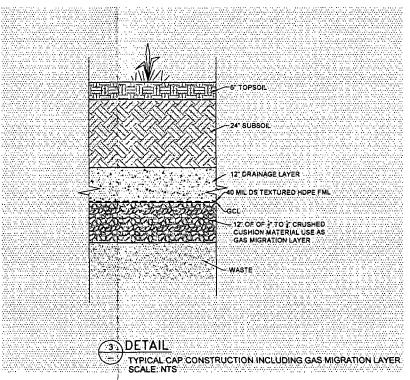
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12" OF OF IF TO IF CRUSHED CUSHION MATERIAL

WASTE

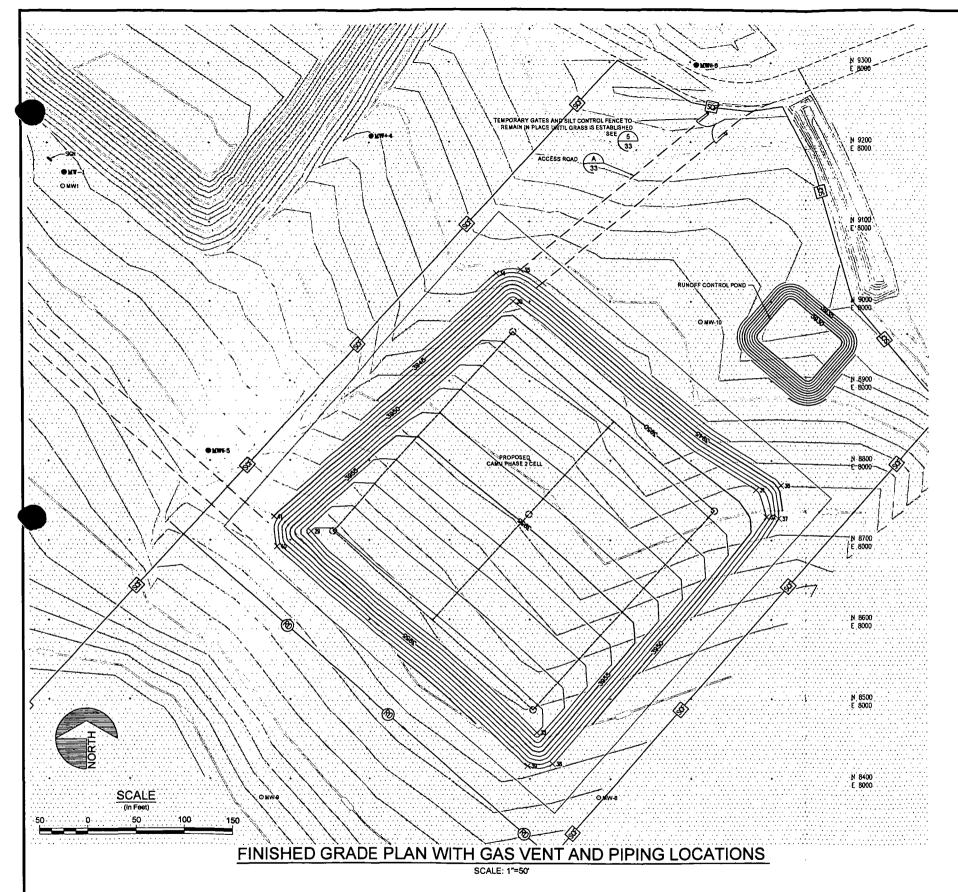
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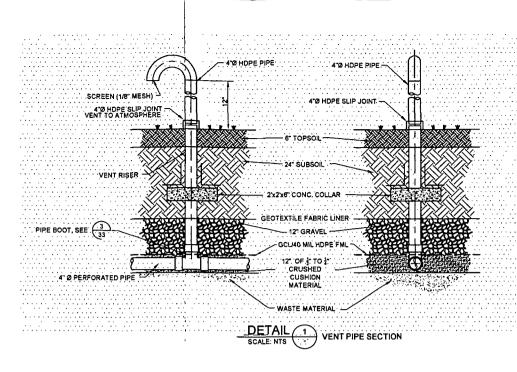
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CONSTRUCTION PROJECT CONTROL POINTS

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	8812.08	7197.71	3952.51	MW5
2	9296.77	. 7807.35	3934.54	MW8.
3	8376.8943	7685.1041	3954.97	
. 4	8376.8165	7262.8426	3961.72	
5	8974.659	7811.757	3942.6	

CONSTRUCTION CAPPING CONTROL POINTS

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
29	8710.8343	7325.8935	3958.84	TOP OF CAP
	8999.5717	7579.6401	3949	TOP OF CAP
1.1 1.1	8783.2501	7880 948	3949	TOP OF CAP
	8729.3733	7893.8993	3949	TOP OF CAP
33	8457.9415	7608:451	3958.84	TOP OF CAP
	9035.0968	7558.2053	3941	TOE OF CAP
35	9039.4102	7588.9005	3941	TOE OF CAP
36	8768.4777	7911.9393	3944	TOE OF CAP
37	8726.6943	7908.9421	3946	TOE OF CAP
38	8418.739	7628.0372	3951	TOE OF CAP
39	8416.0879	7597.2121	3951	TOE OF CAP
40	8691.8392	7283.8127	3951	TOE OF CAP
	8729.3577	7279.8377	3950	TOE OF CAP

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Project No.: 6052

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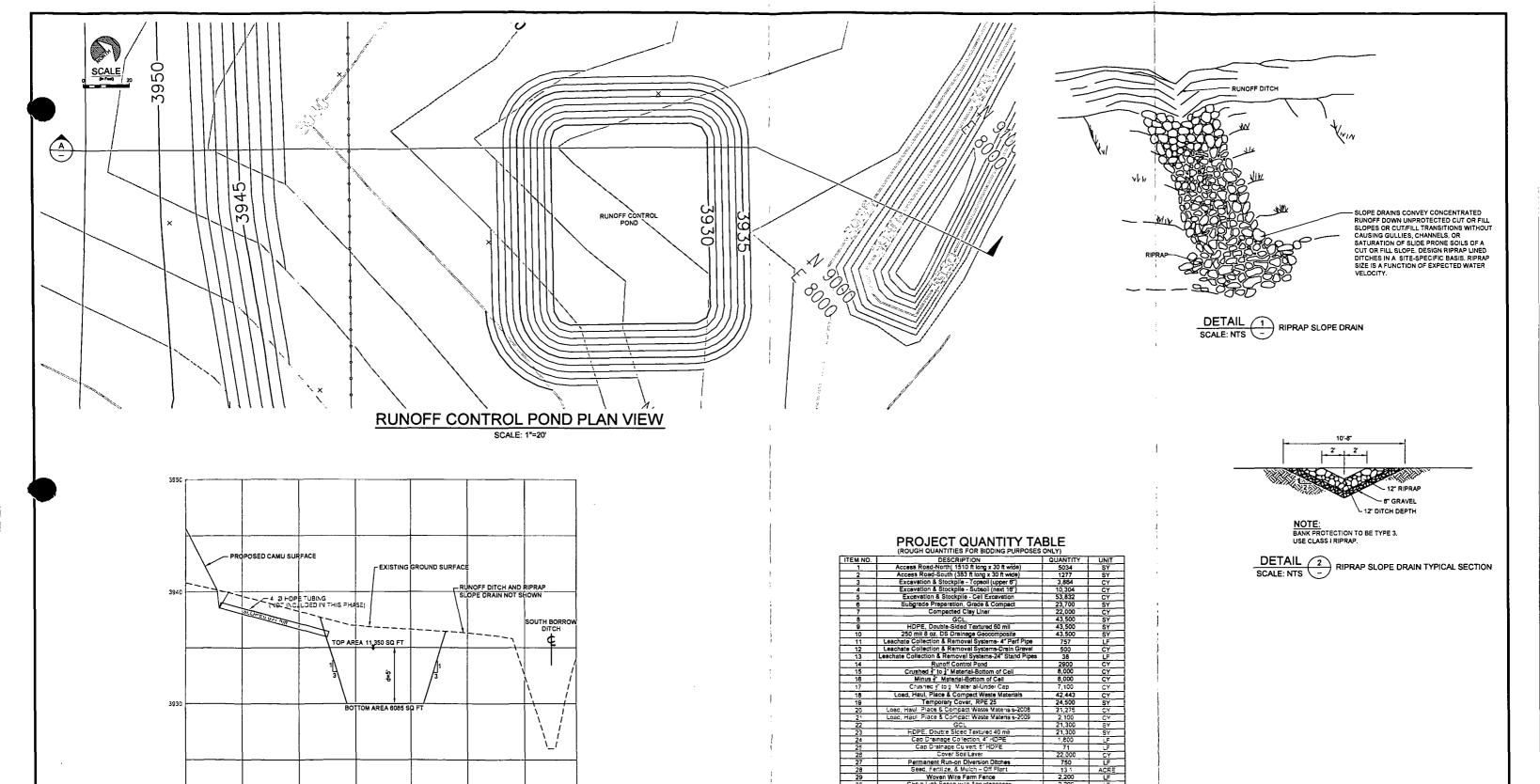
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Hydrometrics, Inc.
Consulting Scientists and Engineers
Helena, Montana 59801

ASARCO LLC - EAST HELENA PLANT
CAMU PHASE 2 CELL PROJECT
FINISHED GRADE PLAN WITH GAS VENT LOCATIONS
AND DETAILS

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31



SECTION A RUNOFF CONTROL POND SCALE: (H) 1"=40 (V) 1"=4" - RUNOFF CONTROL POND (GRAYED BACK ITEMS NOT INCLUDED IN THIS PHASE)

2-0€

2+50

3+00

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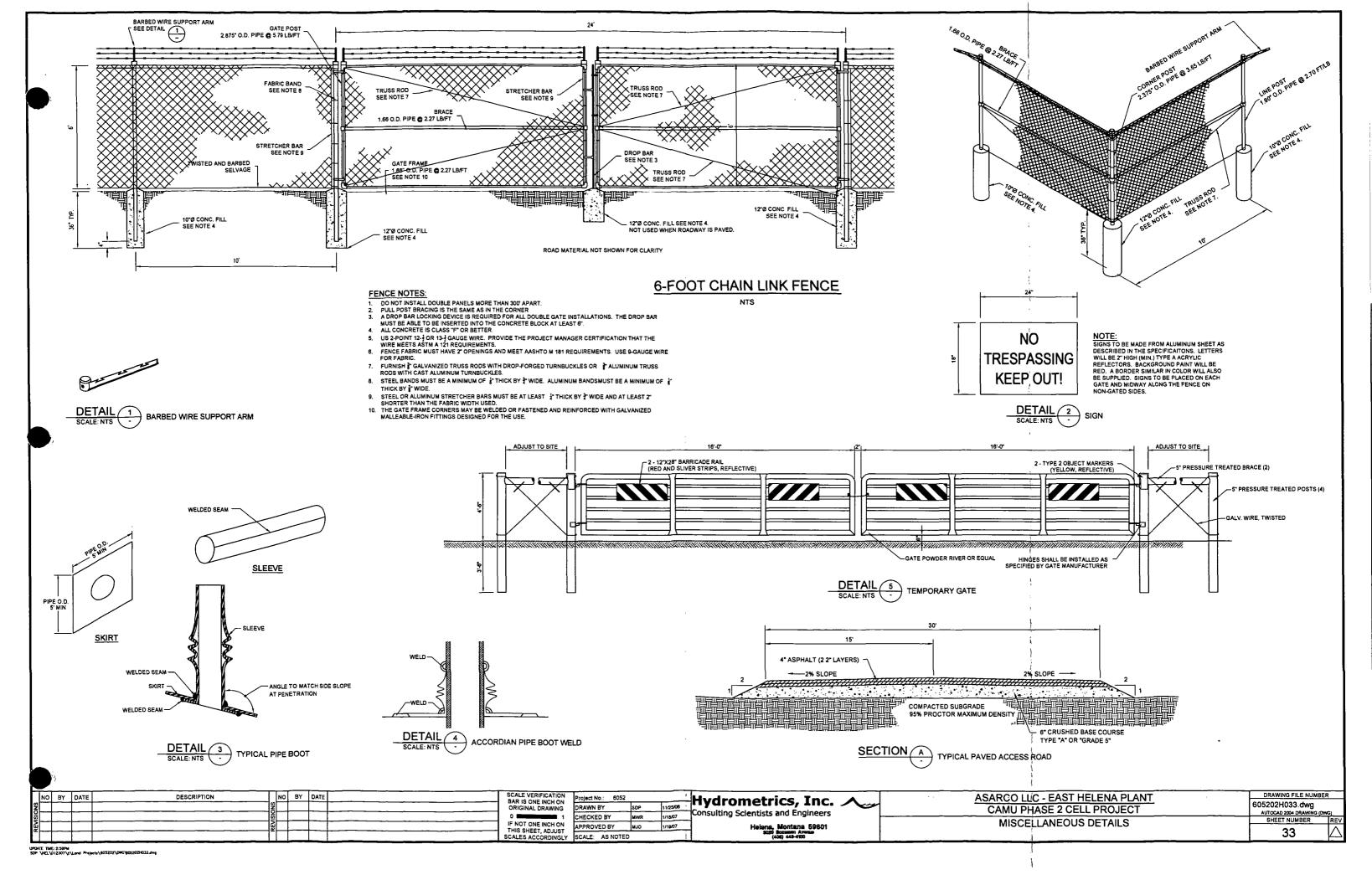
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ION JUST	APPROVED BY	MJO	1/12/07	Helena, Montana 59601			
NCI V	SCALE: AS NOTE	:D		8029 Bozemen Avenue (400) 443-4160			

(GRAYED BACK ITEMS NOT INCLUDED IN THIS PHASE)

ASARCO LLC - EAST HELENA PLANT	DRAWING FILE NUMBER		
CAMU PHASE 2 CELL PROJECT	605202H032.dwg AUTOCAD 2004 DRAWING (DWG)		
RUNOFF CONTROL POND PLAN AND	SHEET NUMBER	RE\	
RIPRAP SLOPE DRAIN DETAILS	32	<u> [</u>	

3920

0+5C



ATTACHMENT B

IRS ENVIRONMENTAL
HAZARDOUS MATERIALS ABATEMENT PLAN

HAZARDOUS MATERIALS ABATEMENT PLAN

ASBESTOS CONTAINING MATERIALS AND LEAD DUST CLEANING ASSOCIATED WITH THE ASARCO PHASE 4 BUILDING CLEANING AND DEMOLITION

Submitted to:

Cleveland Wrecking Company 628 E. Edna PI. Covina, California 91723

Prepared by:
Darin Dietz
IRS Environmental of WA, Inc.
12415 E. Trent
Spokane WA. 99216

April 16, 2007

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	В	Site Specific Hazard Analysis	
	C	ACM Removal Procedures	
	D	Fall Protection Plan	
	Ē	Permits/Notifications	
	3	Material and Equipment Data	
	K	Air Monitoring Plan/Sample Results	
	L	Respirator Protection Program/Medical Clearance Documentation	
	N	Drawings/Site Layout	
	Ö	Laboratory Certifications	
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1.0 Introduction

- 1) IRS Environmental of WA (IRSE) has been contracted by Cleveland Wrecking Company, to abate hazards associated with the asbestos-containing materials (ACMs) that were identified in the structures and lead dust cleaning before selective demolition of the Asarco Lead Smelter Plant, located in East Helena, Montana.
- This work plan describes the methods and procedures IRSE shall utilize to remove the subject ACM and lead dust. Sections 2.0 through 7.0 describe the applicable standards and regulations, site supervision, removal procedures and waste handling, WISHA air monitoring and the laboratory analytical procedures for each building scheduled for ACM abatement and/or lead dust cleaning. Appendix A of this work plan identifies the specific scope of work for each building scheduled for asbestos abatement and/or lead dust cleaning.
- 3) This plan is intended to address removal of ACM and lead dust cleaning from the subject structures.

2.0 Asbestos Abatement and Lead Dust Cleaning-Applicable Standards and Guidelines

- Asbestos abatement work under this contract will be performed in accordance with all federal, state, and local laws, regulations, standards, and codes governing asbestos abatement. Before starting work, IRSE will provide proper notification Montana Department of Environmental Quality (DEQ).
- 3) IRSE will comply with all provisions of the Montana Asbestos Work Practices and Procedures Manual adopted and incorporated by the reference in the administrative Rules of Montana, Title 17, Chapter 74 Subchapter 3 as it pertains to safety in employment and the applicable provisions of DEQ General Safety and Health Standards as it pertains to occupational safety and health in the workplace. In addition, IRSE will comply with Title 29 CFR 1910 and 1926. The most recent edition of any regulation, standards, document, or code will be in effect. When conflict among the requirements or with this work plan exists, the more stringent requirement(s) will be applied.

In addition, IRSE will comply with all provisions of the Federal OSHA standards applicable to construction work where employees may be exposed to lead (Title 29 CFR 1910 and 1926.62). The most recent edition of any regulation, standards, document, or code will be in effect. When conflict among these requirements or with this work plan exists, the more stringent requirement(s) will be applied.

4) Initial exposure assessments will also be conducted at the beginning of all abatement activities in accordance with Title 29 CFR 1926.1101.

3.0 Site Supervision and Certification

- IRSE is a licensed asbestos abatement contractor in the State of Montana. All work will be supervised by Mark Kazemba, a state-certified Asbestos Supervisor and has completed the 40 hour hazwoper training. All supervisors are AHERA trained competent persons.
- Supervisory duties will include, but will not be limited to, controlling site access and implementing proper air sampling protocols, as well as appropriate controls to prevent exposure to ACMs and lead. It is also the competent person's responsibility to ensure adequacy of engineering controls and to exercise the authority to select appropriate control strategies up to and including shutdown of the work if conditions are warranted.
- All workers conducting ACM removal activities will be medically qualified and trained for asbestos work involving respirator usage.
- 4) All workers conducting lead dust cleaning will be medically qualified and trained for lead removal work involving respirator usage.

4.0 Site Safety and Health Plan

4.1 General

- 1) IRSE will be responsible for safety and health at the Asarco Phase 4 Building Cleaning and Demolition Project during anticipated asbestos abatement and lead cleaning activities. This includes, but is not limited to, electrical safety, equipment operation safety, mechanical (tool) safety, fire safety, and personnel protective equipment safety.
- The IRSE Site Specific Hazard Analysis plan for the Asarco Phase 4 Building Cleaning and Demolition Project (see Appendix D) was developed to be used in conjunction with this Asbestos and Lead Dust Abatement Work Plan. Information found in this Work Plan, including air sampling, decontamination procedures, and work activities should be used to supplement the information contained in the IRSE Site Specific Hazard Analysis Plan for the Asarco Phase 4 Building Cleaning and Demolition Project. (see Appendix D).

4.2 Work Site Safety

- 1) Before initiating asbestos or lead cleaning abatement work, IRSE will set and post emergency procedures in a conspicuous place at each active abatement site. The emergency procedures will include provisions for the following:
 - Evacuation of injured workers
 - Emergency and fire egress routes from all work areas, including local telephone numbers for fire and medical emergency personnel, site of hospital routing maps
 - Copies of applicable insurance certificates
 - Entry logs.
- 2) At a minimum, two IRSE personnel with the proper training and certified in basic first aid and cardiopulmonary resuscitation (FA/CPR) will be at each active work site. A general first aid kit will be maintained in the support area for treating minor medical problems.

4.2.1 Work Area Access

Removal work areas will be clearly marked with barrier tape or other means to warn personnel of the hazards. Immediately adjacent to the removal work area (regulated work areas) a decontamination area for equipment and personnel will be established. The remainder of the IRSE project area will be designated as the support zone. No special markings or warning labels are required for this area.

4.2.2 Hazard Briefing/Site Safety Operation

1) No person will be allowed on the site during active abatement activities without first being given a site hazard briefing. In general, the briefing will consist of a review of the Work Plan and the tailgate safety meeting. All persons on the site, including visitors, must sign the site-specific tailgate safety meeting form. Tailgate safety meetings shall be held prior to the start of any work activities involving all personnel on site.

4.2.3 Entry Log

1) The IRSE Competent Person shall record the names and times of entry and exit of all personnel who enter the asbestos removal and lead dust cleaning work areas (regulated work area).

4.2.4 Entry Requirements

- 1) Entry into regulated work areas shall be only by personnel authorized by the State Certified Supervisor, Competent Persons, and Personnel authorized to enter regulated work areas shall be trained and medically evaluated and shall wear the PPE required.
- 2) IRSE will be responsible for the security of the work areas of the building(s) involved in the abatement project and secure all assigned entrances and exits at the end of the work day so as to prevent unauthorized entry.
- 3) The tailgate safety meeting log will be maintained and reflect the name of any and personnel attending.

4.3 Worker Protection Requirements

4.3.1 General

- Danger signs and tape will be posted and meet the specifications of DEQ and OSHA Construction Standards wherever regulated work areas are created. Signs will be posted at a distance sufficiently far enough away from the work area to permit an employee to read the sign and take the necessary protective measures to avoid exposure.
- Electrical power systems located in active abatement areas are de-energized, shut down and locked out and temporary power and lighting sources (if applies) will be provided to the area. The temporary power will be installed in a manner that is consistent with all applicable electrical code, WISHA, OSHA, and IT requirements for temporary electrical systems (if applies).
- 3) A sufficient quantity of negative pressure ventilation units equipped with HEPA filtration and operated in accordance with ANSI 29.2 through 79 (local exhaust ventilation requirements) shall be utilized when needed to provide adequate ventilation, or to provide four air changes per hour inside negative pressure enclosures.

4.3.2 Asbestos Abatement Training

Training shall be provided to all employees or agents who may be required to disturb asbestos for abatement and auxiliary purposes and to supervisory personnel who may be involved in planning, execution, design, or inspection of abatement projects. Asbestos abatement workers and supervisors must have successfully completed Washington State approved training courses and have state certification cards on site at all times when working.

Inspection undertaken to determine the presence of additional asbestos will be conducted by MCS Environmental, who are currently EPA Certified Building Inspectors. Project design personnel will also be EPA certified. Worker and supervisory certificates and training documentation are located in Appendix B.

- 2) Worker training shall provide, at a minimum, information on the following topics:
 - The health hazards of asbestos, including the nature of various asbestos-related diseases, routes of exposure, known dose-response relationships, the synergistic relationship between asbestos exposure and cigarette smoking, latency periods for disease and health basis for standards.
 - The physical characteristics of asbestos, including fiber size, aerodynamic properties, physical appearance, and uses.
 - Employee PPE, including the types and characteristics of respirator classes, limitations of respirators, proper selection, inspection, donning, use, maintenance and storage of respirators, field testing the face-piece-to-face seal (positive and negative pressure fitting tests), qualitative and quantitative fit testing procedures, variations between laboratory and field fit factors, factors that affect respirator fit (e.g., facial hair), selection and use of disposable clothing, use and handling of launderable clothing, nonskid shoes, gloves, eye protection, and hard hats.
 - Medical monitoring requirements for workers include required and recommended tests, reasons for medical monitoring, and employee access to records.
 - Air monitoring procedures and requirements for workers, including description of equipment and procedures, reasons for monitoring, types of samples, and current standards with recommended changes.
 - Work practices for asbestos abatement include proper construction and maintenance
 of air-tight plastic barriers, job set-up of airlocks, worker decontamination systems
 and waste transfer airlocks, posting of warning signs, engineering controls, electrical
 and ventilation system lockout, proper working techniques, waste cleanup and
 disposal procedures.
 - Personal hygiene, including entry and exit procedures for the work area, use of showers and prohibition of eating, drinking, smoking, and chewing in the work area.
 - Special safety hazards that may be encountered, including electrical hazards, air contaminants (CO2 wetting agents, encapsulant, and materials from Owner's operation), fire and explosion hazards, scaffold and ladder hazards, slippery surfaces, confined spaces, heat stress, and noise.
 - Workshops affording both supervisory personnel and abatement workers the opportunity to see (and experience) the construction of containment barriers and decontamination facilities.

 Supervisory personnel shall, in addition, receive training or contract specifications, liability insurance and bonding, legal considerations related to abatement

establishing respiratory protection medical surveillance programs, EPA, OSHA, and State record-keeping requirements.

3) Training must be provided by Washington State approved training providers and must be current, each employee having training certification renewed every 12 months as required by regulation.

4.3.3 Lead Dust Removal Training

Training shall be provided to all employees or agents who may be required to disturb Lead Dust, and to supervisory personnel who may be involved in planning, execution, design, or inspection of Lead Dust removal projects.

Lead Dust removal supervisors will have successfully completed the Lead in Construction Training Course and will hold current certification. Lead removal workers will have completed Four Hour Lead Awareness Training for Lead in Construction as required by WISHA and OSHA.

- 2) Worker training shall provide, at a minimum, information on the following topics:
 - The Content Lead and Title 29 CFR 1910 and 1926.62
 - The specific nature of operations which could result in exposures to lead above the action level
 - Training requirements for respirators as required by 296-62 WAC, Part E and 29 CFR 1926.103
 - The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant).
 - The engineering controls and work practices associated with the employees job assignment including training of employees to follow relevant good work practices described in Appendix B, WAC 296-155-17652 and 29 CFR 1926
 - Instructions that chelating agents should not routinely be used to remove lead from the body and should not be used at all except under the direction of a licensed physician
 - The employees right of access to records under Part B, chapter 289-62 WAC and 296-800 WAC

4.3.4 Respiratory Protection

- 1) Each worker involved in abatement shall be instructed in the proper use of respirators.
- A sufficient quantity of respirator filters approved for asbestos and lead work will be available. Respirators and unused filters, if applicable, will be stored at the job site in the changing room to protect them completely. The filters used will be high efficiency particulate air (HEPA).
- 3) Workers must perform a field fit test/inspection of their respirator as specified by the manufacturer.
- 4) No one wearing a beard shall be permitted to don a respirator and enter the work area.
- 5) Additional respirators and training on their donning and use must be available at the work site for authorized visitors who may request to enter the work area.

4.3.4 Other Personal Protective Equipment

- 1) Personal protective equipment that includes Tyvek or polypropylene coveralls with hoods, hard hats, respirators, and nitrile gloves will be provided in sufficient quantities and adequate sizes for all workers and authorized visitors.
- 2) Protective eyewear and hard hats shall be provided as required for workers and authorized visitors for use outside of the containment area.

4.3.5 Medical Monitoring -Asbestos Abatement

- 1) Medical monitoring must be provided to any employee that may be exposed to asbestos in excess of background levels during any phase of these abatement projects. The purposes of a medical monitoring program are to determine work relatedness of disease, as well as to ensure fitness for duty, particularly the ability to wear a respirator. The medical monitoring program provides the appropriate setting to share this information. Medical monitoring shall include, at a minimum, the requirements of 29 CFR 1926 and IRSE Medical Compliance Plan.
 - A work/medical history to elicit symptomatology of respiratory disease.
 - A chest x-ray (posterior-anterior, 14 x 13 in.) taken by a certified radiologist technician and evaluated by a certified B-reader.
 - A pulmonary function test, including forced vital capacity (FVC) and forced expiratory volume at one second (FEV1), and FEV1/FVC ration (administered by a NIOSH or American Thoracic Society (ATS) Certified Pulmonary Technician) and interpreted and compared to standardized normalcy by a Board Certified Pulmonary Specialist.

- Employees shall be given the opportunity to be evaluated by a physician to determine their capability to work safely while breathing through the added resistance of a respirator. Examining physicians shall be aware of the nature of respiratory protective devices and their contributions to breathing resistance. They shall also be informed of the specific types of respirators the employees shall be required to wear and the work they will be required to perform, as well as special workplace conditions, such as high temperatures, high humidity, and chemical contaminants to which employees may be exposed.
- Evaluation of groups of workers should take into consideration epidemiologic principles as suggested by the ATS in its statement on the work relatedness of disease adopted in 1982.

4.3.6 Medical Monitoring - Lead Abatement

Medical monitoring will be provided to any employee that may be exposed to airborne lead in excess of the action level of 30 μ g³ during any phase of the Lead dust cleaning process. The purposes of a medical monitoring program is to provide baseline blood lead levels and to provide ongoing biological monitoring to insure engineering controls are effective, as well as to ensure fitness for duty, particularly the ability to wear a respirator. The medical monitoring program provides the appropriate setting to share this information.

Medical monitoring shall include, at a minimum, the requirements of 29 CFR 1926.62 and WAC 296-155-17629:

- An accurate record for each employee including Name, Social Security Number, and a description of the duties of each employee.
- A copy of the physician's written opinions, including those related to fitness for respirator use
- Results of any airborne exposure monitoring done on or for that employee and provided to the Physician
- Each employee shall be given the opportunity to be evaluated by a physician to
 determine their capability to work safely while breathing through the added
 resistance of a respirator. Examining physicians shall be aware of the nature of
 respiratory protective devices and their contributions to breathing resistance. They
 shall also be informed of the specific types of respirators the employees shall be
 required to wear and the work they will be required to perform
- Any employee medical complaints related to exposure to lead
- A copy medical examination results and description of the laboratory procedures and a copy of any standards or guidelines used to interpret the test results or references to that information (to be retained by doctor).
- A copy of the results of biological monitoring.

4.4 Emergency Contingency Plan

 Site personnel must be prepared to respond and act quickly in the event of an emergency. The following emergency preparedness and response procedures will aid in protecting site workers and the surrounding environment.

4.4.1 General

- 1) The Site Safety Officer will establish evacuation routes and assembly areas for the abatement site. All personnel entering the work area will be informed of these routes and assembly areas. Evacuation routes, rally points, and the locations of emergency equipment will be included on the site map contained within the work plan prior to the initiation of on-site activities.
- 2) In the case of site evacuation, the following procedures shall be observed:
 - Stop working, secure equipment, and return to the decontamination area for decontamination
 - Exit building
 - Walk to the designated rally point using the evacuation route
 - Notify the on-site IRSE Competent Person, Project Manager and the Environmental Health and Safety representative
 - Remain at the rally point until further information is received
- 3) Personnel should not stand in roads, driveways, or in front of gates, as these locations may be used by emergency and support vehicles entering the site.
- 4) Each site activity will be evaluated for the potential for fire, explosion, chemical release, or other catastrophic events. Unusual events, activities, chemicals, and conditions will be immediately reported to the Competent Person.

4.4.2 Emergency Procedures

- 1) If an incident (personal or vehicle accident, property damage, or near miss) occurs, the following procedures will be used:
 - The Competent Person will evaluate the incident, assess the need for assistance, and notify the Project Manager.
 - The Competent Person will call for outside assistance as needed.
 - The Competent Person will act as liaison between outside agencies and on-site personnel.

- The Competent Person will take appropriate measures to stabilize the incident scene.
- The IRSE Project Manager will provide technical guidance to the Competent Person as needed and notify the MCS's representative.
- The Competent Person will ensure that any injured employee's supervisor completes an injury report form and forwards the form to the Project Manager or Site Safety Officer.

4.4.3 Safety Signals

1) While working on site, the following hand signals will be used for communication when necessary.

Hand SignalMeaningArms crossed over headShut off equipmentHand gripping throatOut of air, can't breatheBoth hands around waistLeave area immediatelyWave hands over headNeed assistanceThumbs upOkay, I am all right, I understandThumbs downNo, negative

- 2) Vehicle or portable air homs will be used for alarm signals as follows:
 - One long blast: Emergency evacuation of the site
 - Two short blasts: Clear working area around powered or moving equipment

4.4.4 Medical Emergency

4.4.4.1 General

- 1) Prior to field work, Site Health and Safety Officer will contact and coordinate with all potential emergency response organizations so that they will be aware of any potential site hazards and can meet training and medical requirements. All employee injuries must be promptly reported to the Competent Person. The Competent Person will:
 - Ensure that the injured employee receives prompt first aid and medical attention.
 - Contact Emergency Services at 911 and state clearly "This is a emergency at the
 <u>East Helena Asarco Plant"</u> ever medical attention is required to ensure that
 appropriate services are provided.
 - Complete the appropriate form or forms and submit them to the Project Manager or Site Safety Officer within one business day of an incident. Forms include:
 - Supervisor's Employee İnjury Report (to be completed by the employee's supervisor)

- Vehicle Accident Report
 - General Liability, Property Damage and Loss Report
- Ensure that the Project Manager and Site Safety Officer are immediately notified of the incident.
- Initiate an investigation of the incident, with the assistance of a representative prior to restarting work activities.

4.4.4.2 Chemical Inhalation

 Any employee complaining of symptoms of chemical overexposure will be removed from the work area and transported to the designated medical facility for examination. The Competent Person must contact the Project Manager and Site Safety and Health Officer immediately.

4.4.4.3 Eye Contact

1) Project personnel who have had contaminants splashed in their eyes or who have experienced eye irritation while on the site shall immediately proceed to the eyewash station. Do not decontaminate before using the eyewash. Remove whatever protective clothing is necessary to use the eyewash. Thoroughly flush the eye with clean water. Arrange prompt transport to the designated medical facility.

4.4.4.4 Skin Contact

Project personnel who have had skin contact with contaminants will, unless the contact is severe, precede through the decontamination facilities to the wash-up area. Personnel will remove any contaminated clothing, and then wash the affected area with water. The worker should be transported to the medical facility listed below if they show any sign of skin reddening or irritation or if they request a medical examination, MSDS should be made available to medical staff for evaluation, if available.

4.4.4.5 Personal Injury Accident

In the event of a personal injury accident, the Competent Person will assess the nature and seriousness of the Injury. In the case of serious or life-threatening injuries, normal decontamination procedures may be abbreviated or bypassed. Less serious injuries, such as strains, sprains, minor cuts, and contusions, may only be treated after the employee has been decontaminated.

Following decontamination, an IRSE project team member qualified in FA/CPR will administer suitable first aid. The Competent Person will then, if necessary, arrange transport to the appropriate medical facility. The Project Manager must be notified of all recordable injuries, illnesses, and vehicle accidents. Washington State Department of Labor and Industries must be verbally notified within eight hours of any accident resulting in a fatality, within 24 hours of in-patient hospitalization.

2) Because the bites of snakes, spiders, scorpions are rare, the recommended treatment is outlined here as a reminder in case of a bite. DO NOT cut the site of the bite and suck out the venom, but rather lie the victim down and keep the person calm. Try to keep the affected area lower than the heart. Ice may be applied to the area of the bite but make sure that there is no direct skin contact with the ice. Use a towel for insulation to prevent freezing the skin. DO NOT use a tourniquet or constricting band on the affected limb. Get the victim to medical attention.

4.4.4.6 Fire

In the case of a fire on the site, the Competent Person will assess the situation and determine the proper response. All personnel NOT trained in the use of fire extinguishers shall evacuate the area involved. Only IRSE personnel trained in the use of extinguishers may attempt to extinguish the fire with available extinguishers if it is safe to do so. If these trained employees do not wish to make the attempt, they are to evacuate also. In the event of ANY fire, IRSE will call the East Helena Fire Department at the number listed in the Site Specific Safety Plan and notify the Site Safety and Health Officer immediately. Fire fighting is a job for the fire department. No property or equipment is so important as to risk an employee's life.

4.5 Failure of Work Area Containment System (where applicable)

- The work enclosure and negative air system will be closely monitored for failure or a breach. If such an event occurs, the work inside would immediately stop and the problem resolved. A breach in containment could be quickly repaired with duct tape; if the negative air system is the source of problems, the cause of the malfunction will be determined, and the necessary repairs or replacements made so that work can resume.
- 2) Asbestos waste that can be vacuumed will be contained in a HEPA vacuum. The bagged waste from the operation would not create a spill hazard. The asbestos waste inside the HEPA vacuum will be removed inside a containment area built specifically for this purpose.

4.6 Emergency Information

- 1) Before the start of the project, contact will be made with local authorities and emergency services to establish a communication channel during an event of emergency and to familiarize the project personnel with the communication procedures and services. Pertinent emergency information will be included on the daily tailgate safety meeting forms.
- 2) The Site Specific Safety Plan at Appendix E contains directions to St Peter's Hospital (see also Emergency Phone List attached).

4.6.1 Key Project Personnel

IRSE Project Manager	Carl Burnham	509-927-7867 509-998-8257	= :
IRSE Competent Person	Mark Kazemba	509-884-4267	mobile
IRSE Health and Safety Officer	Robert Reed	509-927-7867	
CWC Project Manager			_ office _ mobile
CWC Safety and Health Officer			_ office _mobile
Asarco Plant Manager	Blaine Cox	406-227-4098 406-459-8542	office cell
Asarco Environmental Manager	Jon Nickel	406-227-4529	office
Department of Environmental Quali	ity	406-444-5300	office
OSHA Regional Office		406-247-7494	office (Billings)
Montana DEQ (NEHEPS)	John Podolinski	406-444-2690 406-444-1499	office fax
Occupational Medicine Associates	Dr. Royce Van Ge	rpin 509-455	-5555 office

4.6.2 Medical Care Facilities

Saint Peter's Hospital 2475 Broadway Helena, MT 59601 (406) 442-2480

4.6.3 Emergency Telephone Numbers

Emergency	911 Notify Emergency Crews: Say "This is an emergency at the E Helena Asarco lead smelter"		
National Response Center (spills)	800 - 424-8802		
Regional Poison Control Center	800 - 525-5042		
Fire Department	406-227-5377 (Dispatch) or 911		
Police Department	406-227-5377 (Dispatch) or 911		

5.0 Asbestos and Lead Removal Techniques and Procedures

- Asbestos-containing materials that will be removed from the site buildings and are judged by a competent person to be friable (i.e., those ACMs that, when dry, can be crushed, crumbled, pulverized, or otherwise rendered to a dust by hand pressure) will be packaged and stored in a manner prescribed herein for disposal as hazardous waste.
- 1) Lead Dust is present within the interiors of structures schedule to be demolished. These structure will be cleaned of the dust before demolition of the structure.
- 2) Lead Dust waste that is collected during cleaning of the structures will be packaged and stored in a manner prescribed herein for disposal as hazardous waste.

5.1 Notifications

1) IRSE will make required notifications to the Department of Environmental Quality and submit these notifications to CWC before beginning work.

5.2 Work Area Preparation

5.2.1 Warning Signs - Asbestos Abatement

2) Danger signs meeting the specifications of OSHA Construction Safety Order, Section 1529 and WAC 296-62-077 will be posted at any location and approach where regulated areas are present. Signs will be posted at a distance sufficiently far enough away from the work areas to permit any employee or visitor to read the sign and take the necessary protective measures to avoid exposure. Warning signs shall include the following wording:

DANGER ASBESTOS CANCER AND LUNG DISEASE HAZARD AUTHORIZED PERSONNEL ONLY RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

2) These warning signs shall be printed in letters of sufficient size to be clearly legible.

5.2.2 Warning Signs- Lead Dust Abatement

3) Entrance by non- trained personnel into the lead paint removal area will be restricted using 3" barrier tape posted at the work area perimeter. Warning tape shall include the following wording:

Danger Lead Removal Authorized Personnel Only

2) The warning tape shall be printed with letters of sufficient size to be clearly legible.

5.2.3 Electrical Power

The contractor will provide adequate power at each of the buildings. IRSE will provide temporary lighting sources and ensure safe installations (including ground faulting) of temporary power sources and equipment by complying with all applicable electrical code requirements and OSHA requirements for temporary electrical systems, within each building, as applies.

5.2.4 Establishing Asbestos Removal Work Areas

- 1) During indoor Class I removal of thermal system insulation, the wrap and cut method will be utilized. (HEPA) vacuums and wet methods will be utilized.
- 2) As applicable, IRSE will seal the exterior of the regulated areas. All windows, doors, and any other openings to the outside of the building from the regulated areas, will be sealed with a minimum of one layer of 6-mil poly sheeting with duct tape, until a negative exposure assessment is conducted.
- During Class I removal of TSI using glovebag and wrap and cut methods with HEPA vacuum method procedures, the work area will be restricted using signs as described in 5.2.1. 6-mil poly will be installed on floors/ground in work area. Negative air machines may be installed in order to provide clean air from outside the work area at sufficient quantities and at strategic locations, so as to provide clean air in the workers' breathing zone, as described in Appendix D IRSE Hazardous Material Contractor Quality Control Plan.
- 4) During outdoor Class II removal of transite shingles and skirting, a single layer of 6-mil poly will be placed on the ground directly under the material to be removed, extending 10-20' out from the base of the building.
- 5) During outdoor Class II removal of metal siding, a single layer of 6-mil poly will be placed on the ground directly under the material to be removed, extending 10-20' out from the base of the building.
- During Class II removal of floor covering, the work area will be restricted using signs as described in 5.2.1. 6-mil poly will be installed critical in the work area. Negative air machines will be installed in order to provide clean air from outside the work area at sufficient quantities and at strategic locations, so as to provide clean air in the workers' breathing zone, as described in Appendix D IRSE Hazardous Material Contractor Quality Control Plan.
- 7) During Class II removal of asbestos-containing roofing materials a single layer of 6-mil poly will be placed on the ground directly under the material to be removed, extending 10-20' out from the base of the building.
- 8) During Class II removal of window caulking, a single layer of 6-mil poly will be placed on the ground directly under the material to be removed, extending 5-10' out from the base of the building.

- 8) During removal of all Class II work, the area will be restricted using signs described in 5.2.1. Specific means and methods will be found in Appendix D.
- 6) 2" red "DANGER ASBESTOS DO NOT ENTER" tape will be used to restrict access by untrained personnel.

5.2.5 Establishing Lead Dust Removal Work Areas

- As applicable, IRSE will seal the exterior of the regulated areas. All windows, doors, and any other openings to the outside of the building from the regulated areas, will be sealed with a minimum of one layer of 6-mil poly sheeting with duct tape, until a negative exposure assessment is conducted.
- 2) 2" red "DANGER LEAD DO NOT ENTER" tape will be used to restrict access by untrained personnel.

5.3 Workplace Entry and Exit Procedures – Asbestos and LEAD

- 1) IRSE will be using mobile trailer designed as a 3-stage worker decontamination unit, and a fixed worker decontamination unit (2- or 3-stage, depending on the scope of work at each individual work site) and locate it next to the entrance of the work area.
- 2) If the quantity of thermal system insulation exceeds 10 linear feet or 25 square feet, IRSE will construct a three-stage decontamination unit, including clean room, shower and dirty room, contiguous to the "regulated work area". If the quantity of ACM to be abated is less than 10 linear feet or 25 square feet, IRSE will construct a two-stage decontamination unit, including clean room and dirty room, contiguous to the "regulated work area". The procedures that will be used to enter decontamination units are described below.
- 3) Workers will enter the regulated work areas through the worker decontamination unit. The decontamination unit is a fully enclosed system.
- These decontamination units will include an equipment or "dirty" room, a functional shower equipped with hot and cold running water (If necessary), and a changing or "clean" room in series. The decontamination units will also be constructed in such a manner as to provide a systematic reduction of contamination for the workers and equipment exiting the regulated work area. Personnel entry into and egress from the regulated work areas will be through the decontamination units. Equipment and material replenishment may also be conducted through the decontamination unit.
- Wastewater resulting from the operation of the shower units shall be filtered with a 5-micron pore-size filtration system before reuse or discharge. To the extent feasible, filtered wastewater will be reclaimed and used on site for application in wet method work practices. Wastewater to be discharged shall be sufficiently filtered to meet state and local water quality objectives before discharge. Filters shall be changed as necessary to achieve this objective.

- Before exiting the work area, personnel shall remove outer protective clothing and use a HEPA vacuum to remove ACM debris from protective clothing. Workers shall then proceed to move disposable clothing and dispose of it as hazardous waste. Non-disposable clothing (such as work boots) shall be decontaminated before being removed from the work area.
 - **Removing asbestos dust from protective clothing or equipment by blowing, shaking, or any other means that disperses asbestos fibers into the air shall likewise be prohibited.
- 6) If applicable, workers exiting the regulated work areas will wash (shower) all areas of the body that were potentially exposed to asbestos contamination. Respirators shall continue to be worn by workers until the worker has entered the shower and begun to wash. Once the head has been deluged with water, the respirator may be removed. IRSE will supply workers with soap and shampoo to use in the showers.
- A secure change room shall be provided outside the decontamination units and shall be equipped with storage for workers' street clothes and personal belongings. Workers are to change from street clothes each day before entering the regulated work area. Workers are to change back into street clothes each day before leaving the work site. Personnel are prohibited from wearing potentially contaminated clothing off the site. Housekeeping within the change room will be maintained by IRSE. Periodic area air monitoring will be conducted to evaluate housekeeping efforts.
- 8) Waste containers shall also be decontaminated using HEPA vacuums and by wet wiping before being removed from the work areas.
- 9) In the event an emergency egress from within the regulated work is required, the above-described personnel decontamination procedures will not be required. IRSE will exercise judgment to ensure that worker health and safety is placed above environmental contamination concerns.
- In those instances when it is not feasible to provide shower facilities contiguous with the work area or where the work is performed outdoors, the Contractor shall ensure that employees remove (1) asbestos contamination from their worksuits in the equipment room utilizing a HEPA vacuum before proceeding to a shower that is not adjacent to the work area, or (2) their contaminated worksuits in the equipment room, don a clean worksuit, and proceed to a shower that is not adjacent to the work area. A second inner disposable/breathable Tyvek whole-body coverall may be utilized by workers for modesty's sake under the primary outer worksuit. The outer suit will be cleaned using a HEPA vacuum and removed within the isolated work area.
- The containment design and decontamination unit that will be utilized for each work area will be dependent on the DEQ asbestos work classification.

5.4 Personal Protective Equipment

1) Except when more stringent requirements are set forth, the personal protective equipment (PPE) utilized during the conduct of this work must meet or exceed the requirements contained in Title 29 CFR 1926.1101.

5.4.1 Respiratory Protection

- 1) Half-face negative pressure respirators (equipped with HEPA filters) will be utilized for Class I and II materials being removed on this project. Protective glasses or goggles worn by workers will conform to the specifications of the ANSI Z87.1 standard of Title 29 CFR §1910.133.
- 2) Half-face negative pressure respirators (equipped with HEPA filters) will be worn by all personnel working within Lead Dust Removal Work Areas.
- Once a negative pressure enclosure (if applies) has been visually inspected and placed under a negative air pressure differential, full-faced supplied air respirators operated in constant flow or pressure demand mode and equipped with HEPA escape filters, will be worn by workers, supervisors, work monitors, industrial hygienists, and other entering the regulated work area.
- 3) During outdoor Class II removal of materials, half-face negative pressure respirators equipped with HEPA filters will be used.
- 4) During indoor Class II removal of all materials identified, half-face negative pressure respirators equipped with HEPA filters will be used.
- All respirators shall be used in a manner consistent with state-of-the-industry practices. The respirators shall be worn with head straps in direct contact with the head and shall not be worn on the outside of the hoods of disposable whole-body coveralls. An exception to this is allowable in those instances when a remote decontamination unit is being utilized and the worker is double suited. Respirators shall be worn until proper personal decontamination methods, as described herein, are completed.
- 6) The Contractor will provide respirators in accordance OSHA 1019.133 Respirator Protection

5.4.2 Whole Body Protection

- Work boots with nonskid soles or impermeable work-boot covers shall be worn by workers. Protective footwear worn by workers shall conform to the specifications of the ASNI Z41.1 standard. Work boots that have come into contact with contaminated material shall be cleaned, decontaminated, and bagged before removal from the work area.
- Protective head gear (hard hats) shall be worn at all times that work is in progress. Protective head gear worn by workers shall conform to the specifications of the ANSI Z89.1 (Class A) standard. Hard hats shall be thoroughly decontaminated before removing from the work area.

- 3) In work areas where excessive noise is prevalent, worker shall wear hearing protection sufficient to ensure that the worker's 8-hour time-weighted average (TWA) exposure does not exceed 85 Dba.
- 4) IRSE will make available extra sets of PPE to be used by the owners authorized representative for use to enter the regulated work areas.

5.5 Asbestos Removal Techniques and Procedures

- 1) For the purposes of this work plan, the removal of ACM thermal system insulation (TSI) or ACM surfacing materials will be considered "Class I Asbestos Work," as defined by OSHA 1915.1001 and Title 29 CFR 1926.1101 and shall be conducted in accordance with work practices and requirements set forth for Class I work.
- 2) IRSE will conduct the construction activities described herein in accordance with all currently applicable federal, state, and local laws and regulations including, but not limited to, Title 29 CFR 1926.1101.
- 3) All asbestos-containing material thermal system insulation will be removed via the glovebag method or glovebag and wrap and cut method, with negative air ventilation procedures.

5.5.1 Removal of ACM Thermal System Insulation from Buildings

- 5) IRSE will then pre-clean the work area. This will entail cleaning of any visible asbestos debris and dirt which may affect area and clearance air monitoring. Following pre-cleaning, IRSE will begin installing glovebags on the pipes which have been determined to contain asbestos-containing thermal system insulation.
- 6) The IRSE Competent Person will then conduct visual inspections and smoke testing on the glovebags and ensure that all necessary tools are present, including Hudson sprayers, waste bags, and a HEPA vacuum.
- 7) Only after satisfactory visual inspections from the IRSE Competent Person will the go ahead to begin asbestos removal be given.
- 8) All glovebagging will be conducted in two-man crews. One worker will remove the asbestos-containing pipe insulation inside the glovebag while the other worker constantly mists the insulation with amended water.
- Once the ACM insulation has been removed from the pipe and is on the bottom of the glovebag, the pipe and top inside portion of the glovebag will be wet wiped clean. IRSE will twist the bag several times and tape it to keep the ACM in the bottom during removal of the glovebag from the pipe. A HEPA vacuum should be used to evacuate air out of the glovebag.
- 10) A 6-mil disposal bag will be slipped over the glovebag (while still attached to the pipe). The tape holding glovebag to pipe will then be removed and the top of glovebag opened then folded down into waste bag.

11) Following an acceptable visual inspection from the CWC Site Safety Officer, IRSE will apply an encapsulant to all surfaces in the work area and clearance sampling can be collected for analysis.

5.5.2 Outdoor Removal of Transite Shingles and Metal Siding

- 1) The workers will don appropriate PPE as described in Section 5.4.
- 2) IRSE will perform setup of the work area as described in Section 5.2.3(3).
- 3) IRSE will notify the on-site Safety Officer prior to beginning removal so that visual inspections can be conducted to insure that all necessary tools are available, including water, HEPA vacuum, lined dumpster.
- 4) After satisfactory visual inspection by the Safety Officer, IRSE will begin transite removal.
- 5) Transite removal will be conducted using methods described in the IRSE Hazardous Material Contractor Quality Control Plan.

5.5.3 Removal of all other Class II Materials

- 1) The workers will don appropriate PPE as described in Section 5.4.
- 2) IRSE will perform setup of the work area as described in Section 5.2.3(7).
- 3) IRSE will notify the on-site Safety Officer prior to beginning removal so that visual inspections can be conducted to insure that all necessary tools are available, including water, HEPA vacuum, lined dumpster.
- 4) After satisfactory visual inspection by the Safety Officer, IRSE will begin removal of specific materials, as identified in Appendix D.
- 5) Class II removal will be conducted using methods described in the IRSE Hazardous Material Contractor Quality Control Plan.

5.5.4 Final Visual Inspection of Work Area

- 1) Following an acceptable visual inspection by the CWC Site Safety Officer after asbestos removal from each asbestos removal work area, IRSE will apply an encapsulant to all surfaces in the work area and clearance sampling can be collected for analysis.
- 2) All abated areas will be inspected by the Contractor, CWC Onsite Supervisor and IRSE supervisor. Upon successful inspection, each will sign the completed form "Final Inspection Report" Form. The Form can be found at the end of Attachment C: Forms.

5.6 Removal of Lead Dust from Buildings

1) IRSE will conduct the construction activities described herein in accordance with all currently applicable federal, state, and local laws and regulations including, but not limited to, Title 29 CFR 1019.10025.

5.6.1 Vacuuming Lead dust in Building

- 1) The workers will don appropriate PPE a stated in Section 5.4 and IRSE Hazardous Material Quality Control Plan.
- 2) IRSE will then perform setup of the "Lead Removal Work Area" as stated in Section 5.2.4. (1), Including installing critical barriers.
- 3) IRSE will also install a two stage decontamination unit as stated in Section 5.3. The decontamination unit will be placed at the doorway leading into the building or at a central area on site.
- 4) Once the decontamination unit and all critical seals have been installed, the IRSE Competent Person will perform a visual inspection of the work area to ensure that all critical seals are in place and that adequate negative pressure has been established, if applies.
 - 4) All abated areas will be inspected by the Contractor, CWC Onsite Supervisor and IRSE supervisor. Upon successful inspection, each will sign the completed form "Final Inspection Report" Form. The Form can be found at the end of Attachment C: Forms.

6.0 Waste Handling and Disposal

6.1 Packaging and Storage of Waste and Removal from the Work Area

- 1) The friable ACMs that will be removed from the project site and are judged by a competent person to be friable (i.e., those ACMs that, when dry, can be crushed, crumbled, pulverized, or otherwise rendered to a dust by hand pressure) will be packaged and stored in a manner prescribed herein for disposal as hazardous waste.
- 2) Friable asbestos waste shall be placed in two layers of 6-mil polyethylene disposal bags.
- 3) All friable asbestos waste (bagged) will exit the work area through the equipment room of the decontamination unit or from a separate waste load out decontamination unit. These waste loads out units will be contiguous to the work area containment.
- 4) The personnel loading the asbestos-containing waste will be protected by disposable clothing and, at a minimum, half-facepiece air-purifying dual-cartridge respirators equipped with high efficiency filters.
- 5) The bagged or wrapped asbestos waste shall be properly labeled and placed in locked storage containers. At a minimum, the outside of each waste bag or package containing asbestos hazardous waste will be labeled as described in 6.2(5).

6.2 Packaging and Storage of Nonfriable Waste and Removal from the Work Area

- The nonfriable ACMs that will be removed from the project site and are judged by a competent person to be nonfriable (i.e., those ACMs that, when dry, cannot be crushed, crumbled, pulverized, or otherwise rendered to a dust by hand pressure) will be packaged and stored in a manner prescribed herein for disposal as hazardous waste.
- 2) Nonfriable asbestos waste will be loaded directly into a mega boxes, (Gaylord boxes) place in disposal bags and doubled bagged or double wrapped with 6 mil poly.
- 3) The personnel loading the asbestos-containing waste will be protected by disposable clothing and, at a minimum, half-facepiece air-purifying dual-cartridge respirators equipped with high efficiency filters.
- 5) The wrapped asbestos waste shall be properly labeled and placed in locked storage containers. At a minimum, the outside of each package containing asbestos hazardous waste will be labeled as follows:

DANGER CONTAINS ASBESTOS FIBERS AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD HAZARDOUS WASTE STATE AND FEDERAL LAW PROHIBITS IMPROPER DISPOSAL IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OF THE WASHINGTON DEPARTMENT OF

Generator's Name

Address

Manifest

RQ, Asbestos, 9, NA2212, III

TOXIC SUBSTANCES CONTROL

The asbestos disposal containers (e.g., bags, wraps and boxes) and storage areas shall be secured and placarded with appropriate warning signage

6.3 Transportation and Disposal

1) The disposal of waste that contains asbestos waste and lead waste will stay onsite and be placed in a storage area designated by the General Contractor.

7.0 Air Monitoring Sampling

7.1 Personal Air Monitoring - Asbestos

- 1) IRSE's Competent Person will be conducting personal air monitoring on workers involved in the project. Personal air monitoring for asbestos will be conducted in accordance with Title 29 CFR 1926.1101. The IRSE Competent Person shall use the personal air monitoring results to evaluate the effectiveness of engineering controls and the adequacy of PPE and to determine whether the appropriate work practices are being utilized.
- 2) Personal exposure monitoring for asbestos shall be conducted utilizing single-use standard 25-mm-diameter, 0.8 -micron pore size, MCE membrane filters and cassettes with nonconductive cowlings ("barrels") and shrink bands. Air samples for asbestos concentrations will be analyzed by PCM Method 7400/7402.
- 3) The Contractor's workers shall not be exposed to an airborne fiber concentration in excess of 1.0 fiber per cubic centimeter (f/cc) as averaged over a sampling period of 30 minutes nor in excess of 0.1f/cc as expressed as an 8-hour TWA.
- 4) The Contractor will post the results of daily personal air monitoring at the job site.

7.2 Pre-abatement, Area and Perimeter Sampling – Asbestos

- Except as otherwise noted, environmental sampling for airborne asbestos shall be conducted utilizing single-use, standard 25-millimeter-diameter, 0.8-micron pore size, mixed MCE membrane filters and cassettes with nonconductive cowlings ("barrels") and shrink bands. Air samples for asbestos concentrations will be analyzed by PM Method 7400.
- 2) IRSE Competent Person shall conduct daily environmental air sampling for airborne fiber concentrations outside the regulated asbestos work areas. A minimum of two samples will be collected outside each Class I negative pressure enclosure abatement activities.
- 3) Pre-abatement (baseline or background) air sampling will also be conducted by IRSE's supervisor. These samples will be collected in general accordance with 29 CFR 1926.1101, although the number of samples collected per location will vary. Air samples for baseline asbestos fiber concentrations will be analyzed by PCM Method 7400. Pre-abatement air samples will be collected by "nonaggressive" methods.

7.3 Final Cleaning, Clearance Sampling Methodology and Analysis – Asbestos

Visual inspections and air clearance sampling of each work area shall be conducted by an independent contractor hired by the owner/general contractor. Following the completion of asbestos abatement and final detail cleaning in each work area. The cleaning phase will include misting the air with amended water to reduce airborne fiber concentrations. The cleaning process shall also include vacuuming with HEPA-equipped vacuums and wet wiping. Horizontal surfaces within the area shall be cleaned of all visible asbestos debris using a HEPA vacuum and wet wiped.

If a visual inspection reveals residual three-dimensional debris, IRSE will abate the debris, detail clean the area of the debris, and repeat the HEPA vacuum and wet wiping process.

Once the recleaning process is complete, the work area shall be subject to another visual inspection for the presence of residual three-dimensional debris.

- Satisfactory completion of this visual inspection will be followed by the encapsulation of the substrates and/or systems from which the ACM was removed. Following a suitable period of time to allow the encapsulant to dry, final air clearance samples will be collected. Clearance air samples will be collected using the methods described herein. Negative pressure equipment (NPE), if applicable, will continue in operation until satisfactory clearance air sample results are achieved. Failure to achieve satisfactory air clearance results will result in IRSE repeating the final cleaning process and the subsequent collection of additional clearance air samples.
- 3) Collection and analysis of clearance air sample monitoring for asbestos hazard abatement will be an independent industrial hygiene provider under contract with the owner/general contractor. Collection and analysis of clearance work areas after the ACM hazard has been abated and the work area has passed a visual clearance
- 4) Five or more samples will be collected within each containment. Clearance air samples indicating airborne fiber concentrations within the requirements of AHERA Guidelines for asbestos response action activities in schools will received, and written permission from Northern Industrial Hygiene will be obtained before releasing IRSE to demobilize the work area.
- Once a work area has been abated of ACM hazards, satisfactory final air clearance testing has been concluded and written permission from Northern Industrial Hygiene has been obtained, any remaining layers of polyethylene sheeting shall be removed and disposed of as asbestos waste

7.4 Personnel Air Monitoring - Lead

- 1) IRSE's Competent Person Supervisor will be conducting personal air monitoring on workers involved in the project. Personal air monitoring for lead will be conducted in accordance with Title 29 CFR 1926.62. The IRSE Supervisor shall use the personal air monitoring results to evaluate the effectiveness of engineering controls and the adequacy of PPE and to determine whether the appropriate work practices are being utilized.2) Personal exposure monitoring for lead shall be conducted utilizing single-use standard 37-mm-diameter, 0.8 -micron pore size, MCEF membrane filters and cassettes with nonconductive cowlings ("barrels").
- The Contractor's workers shall not be exposed to airborne lead in concentrations over 15ug/m³ (half of the action level) as expressed as an 8-hour TWA. If airborne concentrations of lead in the breathing zone of any individual employee reaches 10ug/m³, work will stop and the Northern Management Services Project Manager will be notified. Engineering controls will be re-evaluated and additional engineering controls will be implemented before work resumes.

4) The Contractor will post the results of daily personal air monitoring at the job site within 72 hours of air sample collection.

7.5 Area and Perimeter Sampling - Lead

- The IRSE Supervisor shall use the personal air monitoring results to evaluate the effectiveness of engineering controls and the adequacy of PPE and to determine whether the appropriate work practices are being utilized.
- 2) Monitoring for lead shall be conducted utilizing single-use standard 37-mm-diameter, 0.8 -micron pore size, MCEF membrane filters and cassettes with nonconductive cowlings ("barrels").
- 4) IRSE's Supervisor will collect air samples prior (baseline or background) to LBP removal. These samples will be collected for information and documentation only, and are not required by contract documents or regulation.

8.0 Laboratory Analysis of Personal Air Samples

- 1) All personal and OWA air samples will be analyzed at Mountain Labs, Inc.. This lab is an American Industrial Hygiene Association (AIHA) and an EPA National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory.
- 2) All air samples for asbestos concentration will be analyzed by PCM Method 7400/7402.

Appendices

- A Supervisor Qualifications
- **B** Site Specific Hazard Analysis
- **C** ACM Removal Procedures
- D Fall Protection Plan
- **E** Permits/Notifications
- F Material and Equipment Data
- **G** Air Monitoring Plan/Sample Results
- H Respirator Protection Program/Medical Clearance Documentation
- I Drawings/Site Layout
- J Laboratory Certifications
- **K** Material Safety Data Sheet

Appendix A Supervisor Qualifications



MARK KAZEMBA Supervisor

FIRM AFFILIATION—Mark is a full time employee at IRS Environmental

YEARS OF RELEVANT EXPERIENCE—20 years in asbestos abatement field.

ACTIVE REGISTRATIONS

ACTIVE REGISTRATIONS (CONTINUED)

AHERA-Certified Asbestos Supervisor

Professional

EPA-Certified Asbestos Supervisor

HAZMAT Certified - 40 hour

Crane and Rigging

CPR / First Aid

Cutting and Welding safety certified.

SPECIFIC QUALIFICATIONS,

Mr. Kazemba has been employed by IRS Environmental since 2005. His relevant project experience since 1987 includes hazardous materials abatement projects supervised at University of Washington, University of Idaho, and University of Montana. These hazard control activities include asbestos and lead painted building component removal, handling of PCB containing lighting ballasts, mercury lamps, and universal hazardous wastes. Mark Also has five years of home building experience prior to his asbestos abatement career.

RELEVANT PROJECT EXPERIENCE

Mr. Kazemba experiences in specific evaluation criteria are shown in the table below. The project descriptions that follow are descriptions of projects requiring skills that are relevant to this project.

•	Asbestos abatement	1	Demolition	1	Residential abatement	
~	Asbestos abatement in occupied commercial or public industry buildings, including college campus. Work experience includes University of Washington. University of Idaho, and university of Montana.		Management and or Supervision of three asbestos abatement projects over \$ 300,000.00	7	Dismantling of Lighting Fixtures including Handling, Storage and Disposal of Universal and Hazardous Wastes.	
1	Commercial/Industrial abatement		Cost tracking		Test pit/trench excavation	
7	Equipment decontamination Excavation		Field documentation		WASTE MANAGEMENT	
1			Instrument installation		(CONCOVER, COMPACTION,	
1	Decontamination or waste mgmt	7	Lead-based paint abatement		Waste treatment, transport, and/or	
	of contaminated tangible proper		Monitoring well Installation	j	management	
1	Debris removal	1	Public relations		UST removal, closure, replacement	
į		}			}	

University of Idaho—On site supervisor for project involving abatement of thermal system insulation, vinyl asbestos floor tile, spray applied fireproofing, lead related demolition work, PCB Light Ballast Handling, and Lab Sinks.

Fairchild Air Force Base —On site supervisor during selective demolition activities and asbestos removal activities.

The Postal Annex- On site supervisor during removal of PCB Ballasts, 190,000 SF vinyl asbestos floor tile and asbestos mastic, 120,000 SF of asbestos containing brownscoat ceiling texture and 1,000 LF of asbestos thermal system insulation.

Libby Soil Remediation - On site supervisor during clean up of vermiculite contaminated soil project. Removed and replaced 6-10 Inches of soil on multiple residential sites.

Kaiser Aluminum — On site supervisor during removal of thermal system insulation and fire proofing insulation in the soaking pits and batch ovens. Selective demolition of refractory walls and floors to access asbestos materials. Cleaned and abated batch ovens and removed thermal insulation from piping using glove bag procedures.

Asarco Plant, Helena, MT - On Site Supervisor during heavy metal dust contamination clean up and removal of 170,000 SF of Galbestos siding, 80,000 SF of Transite siding and roofing panels and 2,000 SF of vinyl asbestos tile and associated mastic.



CERTIFICATE OF TRAINING

THIS IS TO CERTIFIY THAT

MARK KAZEMBA, XXX-XX-8319

HAS COMPLETED 8 HOURS OF REFRESHER TRAINING IN HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

ACCORDING TO THE REQUIREMENTS OF 29 CFR 1910.120 AND CHAPTER 296-843-20010, WASHINGTON ADMINISTRATIVE CODE

Training Period 3 March 2007

Expiration Date 3 March 2008

Certificate Number 7-0010.18-11

Richard A. Johnson, CIH instructor



J Tech Industrial Hygiene Services, 2293 West Windermere Avenue, Coeur d' Alene, Idaho 83815 208-676-9965



Paula A. Lantsberger, MD MPH Terrence D. Rempel, MD 57, 5 Royce F. Van Gerpen, MI 45004

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Name:	Mark	Kazemba		· · · ·	Date Exam	nined:	4-12-06		
,					tions that would pl nt from exposure to				
	Limitations: Recommended restrictions on this employee or upon the use of personal protective equipment:								
	Physician's statements: I have informed this employee of the results of the medical exam and of any medical conditions resulting from asbestos exposure that require further explanation or treatment.								
	I have also informed this employee of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure. Physician algorities Lancaugher, Rempel, Van Gerçen								
Exami	Examination: Height: 73 Weight: 26/ B/P:/22/FO Pulse: 68								
	2	omal I	Abnormal	TM	intact				
	Mouth: Neck: Lungs: Heart:			Cler Sup Cler	ials clear ar / no obstruction ple / no masses ar A + P jular Rate / no mum		bt 18qh		
	Abdomen: Lymphatics:		<u> </u>	No	mass / no organom ymphadenopathy				
	PFTs:	□ Normal	E Abnoi	mal	① Unacceptable	D No	change		

DAbnormal DUnacceptable

SNo change



WASHINGTON-OREGON-IDAHO-MONTANA E. 12415 TRENT AVE. * SPOKANE, WA 99216 (509) 927-7867 FAX 928-3933

ASBESTOS*LEAD ENVIRONMENTAL SERVICES

IRS ENVIRONMENTAL OF WA, INC. CERTIFICATION OF WORKER'S ACKNOWLEDGMENT

* WORKING WITH ASBESTOS CAN BE DANGEROUS.

* * * INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH VARIOUS TYPE OF CANCER

* * * IF YOU SMOKE AND INHALE ASBESTOS FIBERS THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS * GREATER THATN THAT OF THE NON-SMOKING PUBLIC.

IRS ENVIRONMENTAL requires that:

*You be supplied with the proper respirator and be trained in its use.

You be trained in safe work practices and in the use of the equipment found on the job.

You receive a medical examination.

These things have been done at no cost to you. By signing this certification you are acknowledging the fact that IRS Environmental (your employer) has met these obligations to you,

RESPRIATORY PROTECTION: I have been trained in the proper use of respirators, and informed of the type of respirator to be used on IRS Environmental asbestos and lead removal projects. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped at no cost with the respirator to be used on this project.

TRAINING COURSE: I have been trained in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. The topics covered in the course include the following:

Physical characteristics of asbestos Health hazards associated with ashestos Respiratory protection Use of protective equipment Negative air systems Work practices including hands on or on-job training Personal decontamination procedures Air monitoring, personal and area

this Centles that Mark Każemba has completed the Responder (Course for Pirst Aid and CPR Course Date

Expiration Date Instructor.

MEDICAL EXAMINATION: I have had a medical examination within the past 12 months, which was paid for by IRS Environmental or my previous employer. This examination included: health history, pulmonary function tests and may have included an evaluation of a chest x-tay.

Employee Signature CERTIFIED AS PROVIDED BY LAW AS

ASBESTOS SUPERVISOR CERTIFICATE NUMBER: 200700808 EXPIRATION DATE: 09/16/2007

KAZEMBA, MARK C. E 24714 SAN CARLOS NEWMAN LAKE WA 99025

Signature ____ Issued by DEPARTMENT OF LABOR AND DIDUSTRIES C/= 22 = 08

MÁ	RK C KAZEME	A
has met the requirem	nents of Title 17, Ch	apter 74.3.
Subchanter 3, of the	Administrative Rule	s of Montana
for accreditation in occupation (s) as jud	the following as best	ik-typê
Occupation(2)	MTA-2317	
CS 👼	MR P	IN
09/16/2007 (WK		1
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M	DEQAsberre	ontrol Program



Employee Signature:

WASHINGTON-OREGON-IDAHO-MONTANA E. 12415 TRENT AVE.*SPOKANE,WA 99216 (509) 927-7867 FAX 928-3933

ASBESTOS*LEAD ENVIRONMENTAL SERVICES

QUALITATIVE FIT TEST RECORD

Issue Date: Expiration Date: Soc. Sec. No.: Test Operators Jack TYPE OF QUALITATIVE FIT TEST: IRRITANT SMOKE RESPIRATOR NIOSH Approval # ___TC-21C-152 Respirator brand: Wear at least 10 minutes: Model: +/- Pressure fit check: Size Small Med. Bach exercise is performed for one minute Normal Breathing No talking Deep breathing-be certain breaths are deep Turn head side to side-Inhale on each side, do not bump the respirator against shoulders Move head up and down-Inhale when head is in full up position, do not bump respirator against chest. Reading-with eyes closed, repeat slowly and clearly after the conductor the "Rainbow Passa Jogging in place-log in place Normal breathing-No talking Supervisor Signature

^{**} Employee must have a current qualitative fit test before assigning them a task that requires a respirator to be worn.



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ASBESTOS*LEAD ENVIRONMENTAL SERVICES

QUANTITATIVE FIT TEST RECORD



J TECH. Industrial Hygiene Services

CERTIFICATE OF FIT TESTING

J Tech Proudly Announces that

MARK KAZEMBA XXX-XX-8319

has successfully completed Training and Fit Testing
for the following respirator eccording to Table 18, Chapter
286-84Z-200 WAC Amblent Aerosof Condensation Nuclei
Counter (Ponasount)

Full Face Piece NORTH Model 7600 Size M/L

EXP. 3/3/08

Appendix B Site Specific Hazard Analysis



WASHINGTON-OREGON-IDAHO-MONTANA

12415 E. TRENT AVE. * SPOKANE VALLEY, WA 99216 (509) 927-7867 FAX (509) 928-3933

ENVIRONMENTAL SERVICES

ACTIVITY HAZARD ANALYSIS

Date: April 17, 2007	
Project: ASARCO Phase 4 Building Cleaning and Demolition Site Supervisor: MARK KAZEMBA Asbestos ing, pipe ing dow visual Review for latest use: Before the job is performed.	
Site Safety Officer:	
Review for latest use: Before the job is performed.	

Work Activity Sequence (identify the principal steps involved and the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
General Conditions	Noise	Wear hearing protection during the operation of Industrial Hurricane HEPA VAC., Compressor and HEPA Vacuums. Also when working in close proximity of motorized equipment used by all trades in general work area. Hearing protection will be worn while using power tools (ex. Skill saw, sawzall)
General Conditions		Tools shall be inspected prior to use and damaged tools will be tagged and removed from service.
General Conditions, Continued	Hand Tools Hand Tools Continued	 Hand tools will be used for their intended use and operated in accordance with industry standards; All power tools equipped with a safety guard of any type shall be used only with the guard in place and functioning properly. Portable power tools will be plugged into GFCI protected outlets; and Portable power tools will be Underwriters Laboratories (UL) listed and have a three-wire grounded plug or be double insulated. Tools shall be used only for their intended purpose.
		 All power tools shall be unplugged (electric), de-energized (battery), unhooked from air supply (pneumatic) or pressure

Work Activity Sequence tify the principal steps involved the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
Preparation of plastic enclosure, working in plastic enclosure	Fire hazard	 Insure ABC fire extinguishers are in place in every work area. One fire extinguisher for every 2,000 SF of work area per floor. Insure all workers are properly trained in use of fire extinguishers. NO SMOKING IS ALLOWED ON SITE IN ANY AREA!
Mastic removal in enclosed work area	Fire and explosion	Discuss MSDS for mastic removal solvents with each worker Work area will be fresh-air ventilated with a minimum of 12 air changes per hour. PPE will be provided by IRS and worn, to include: Safety Glasses, ½ face respirators with appropriate cartridges, disposable polypropylene coveralls, nitrile rubber gloves and boot coverings.
Preparation for Asbestos Removal	Slips, trips and falls due to cords, hoses, wet working conditions.	 All heat and ignition sources will be eliminated. NO SMOKING IS ALLOWED ON SITE IN ANY AREA! Maintain housekeeping at all times to prevent tripping hazards Work areas will be visually inspected and slip and trip hazards will be marked, barricaded or eliminated.
VAT Removal		 Proper illumination will be maintained in all work areas. Warning! ~ Wet plastic floors are slippery. Maintain guardrails on all rolling scaffold, wear non-slip boots! Warning! Piles of VAT are extremely slippery, like shale rock. Clean up VAT immediately and place in disposal container. Do not allow large accumulations of VAT on floor. DO NOT stand on VAT piles!
Asbestos VAT removal, placing VAT waste in containers and disposal process.	Strains/Lifting hazards – Heavy disposal bags, vacuum hoses, tools.	 1. Get as close to the load as possible. 2. Avoid picking up heavy objects placed below your knees. 3. Keep your back straight when reaching to lift an object. Tighten your stomach muscles to keep your spine from twisting while lifting a load. 4. Bend with your knees not your back. Stretch and loosen up before work. Change direction by moving your feet not your hips. Look ahead to make sure the path is clear. Remember steps 1-4 above when putting load down or stacking.
Cement asbestos Board (CAB), metal siding and roofing removal	Strains/Lifting hazards – Heavy disposal bags, vacuum hoses, tools	 1. Get as close to the load as possible. 2. Avoid picking up heavy objects placed below your knees. 3. Keep your back straight when reaching to lift an object. Tighten your stomach muscles to keep your spine from twisting while lifting a load.

Work Activity Sequence	Potential Health and Safety Hazards	Hazard Controls
ntify the principal steps involved the sequence of work activities)	(Analyze each principal step for potential hazards)	(Develop specific controls for each potential hazard)
Compand Ashards Board (CAR) madel		4. Bend with your knees not your back.
Cement Asbestos Board (CAB), metal siding and roofing removal - Continued		Stretch and loosen up before work.
		Change direction by moving your feet not your hips. Look ahead to make sure the path is clear.
		Remember steps 1-4 above when putting load down or stacking
		 100% Fall protection will be required for work on the roof covered under this AHA, whether it be full guardrail systems or personal fall arrest systems. Refer to the fall protection plans for details.
		 In general, on roof bays, personal fall arrest systems with adequate anchorage is required if guardrail system is in place.
		 Ensure that areas of suspect integrity are adequately marked and barricaded to ensure no possibility that personnel or equipment cannot fall through the roof
Rolled Roofing Removal		 100% Fall protection will be required for work on the roof covered under this AHA, whether it be full guardrail systems or personal fall arrest systems. Refer to the fall protection plans for details.
		 In general, on roof bays, personal fall arrest systems with adequate anchorage is required if guardrail system is in place.
		 Ensure that areas of suspect integrity are adequately marked and barricaded to ensure no possibility that personnel or equipment cannot fall through the roof
Man Lift Operation	Operation Hazards	 Manlift(s) shall not be used above personnel on the ground or working on the roof.
		 Read and understand the operating instructions and safety rules for the equipment being used.
		 Understand all decals, warnings and instructions displayed on the work platform
		 Inspect for defects that would affect a lift's safe operation. Be alert for cracked welds or other structural defects, leaks in hydraulics, damaged control cables, loose wires, or bad tires.
		Test the controls to make sure they work.
		 Check the operating condition of the brakes, lights and other automotive-operating accessories, such as horns and warning devices.
	Operators must "NOT"	 Use ladders or makeshift devices on the platform so workers can reach higher.
		Climb up or down extendable arms.
		Sit on or climb on the edge of the basket.
/		Delay reporting any defects or malfunctions to the supervisor.

Work Activity Sequence Ify the principal steps involved the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
		Engage in stunt driving or horseplay.
Overhead demolition		 Manlift(s) shall not be used above personnel on the ground or working on the roof.
		Hard hats will be required for all overhead demolition work.
		Barricade overhead demolition zones as needed.
Generators.	Fire hazards	Fuel equipment <u>prior</u> to use each day, while equipment is cool.
		 Only refuel equipment after the engine has been allowed to cool.
		Clean up spilled gas immediately.
		 Ensure that gas caps are tight after refueling and periodically during operation.
		 ABC Fire extinguishers will be staged in close proximity to all tools and equipment that are being used and in refueling areas.
		 Sources of ignition are prohibited in areas where equipment is being refueled.
Cenerators	Electrical hazards	 Ensure that generators are adequately grounded to the frame of the device.
		 Ensure that generators are equipped with Ground Fault Circuit Interrupters (GFCI) and that they are tested prior to use.
		 Inspect electrical cords prior to use and remove damaged cords from service.
		 Inspect grounded tools to ensure that the ground prong is in place and that three wire grounded temporary cords are used for these devices.
		 Double insulated tools do not require a third wire grounding conductor.
Regulated asbestos work area – containment.	Asbestos hazard	 Install signs and barrier tape to create regulated work area prior to any Asbestos removal activities. See asbestos removal work plan.
		 Install multiple layers of 6ml floor below asbestos fireproofing removal area prior to beginning removal.
		 Install multiple layers of 6ml wall covering in area where asbestos fireproofing removal is to occur prior to beginning removal.
		 Install and test negative pressure enclosure and decontamination facilities prior to beginning activities which will disturb asbestos fire proofing or VAT and mastic removal.
		 Only trained and certified workers will be allowed in asbestos regulated work areas.
		 All workers will enter and leave regulated work area through designated decontamination area.
		Housekeeping shall be a priority. Use installed drop sheets to

Work Activity Sequence ntify the principal steps involved . the sequence of work activities)	Potential Health and Safety Hazards (Analyze each principal step for potential hazards)	Hazard Controls (Develop specific controls for each potential hazard)
		aid prompt clean up.
Regulated asbestos work area ~ containment (continued)		Absolutely no debris will be allowed to accumulate in work areas.
		Workers will decontaminate using shower prior to exiting the work area.
		All waste will be wrapped or packaged in 6ml plastic immediately.
		All packaged waste will be stored in designated covered and locked storage container by end of each work shift.
		All workers will wear proper PPE to include ½ face air purifying respirators (VAT and mastic), or full faced Type C Respirators (Asbestos fireproofing) full disposable coveralls in addition to on site standard PPE.
Detail Cleanup	HEPA VAC	Wear hearing protection during use

Equipment to be used (List equipment to be used in the work activity)	Inspection Requirements (List inspection requirements for the work activity)	Training Requirements (List training requirements including hazard communication)
Detail Clean up (cont.)	Check bags and filters daily of as needed. Check filters daily and remove debris	Use by trained personnel only. Hearing Protection Program. ear plugs required.
Hand tools (pry bars, hammers, manual scrapers	Check handles and tool condition daily	Training on proper use. Eye Protection.
Sawzall, Circular Skilsaw.	Daily inspection	Training on proper use. Eye Protection
Main lift	Daily inspection	 Inspect for defects that would affect a lift's safe operation. Be alert for cracked welds or other structural defects, leaks in hydraulics, damaged control cables, loose wires, or bad tires.
		 Test the controls to make sure they work. Check the operating condition of the brakes, lights and other automotive-operating accessories, such as homs and warning devices.

ACTIVITY HAZARD ANALYSIS

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Supervisor Name	
Date/Time:	
Safety Officer Name:	· · · · · · · · · · · · · · · · · · ·
Date/Time:	-
Employee Name(s):	
Date/Time:	
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Employee Name(s):	
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Employee Name(s):	
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	ACTIVITY HAZARD ANALYSIS (Continued)
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Appendix C ACM Removal Procedures

ASARCO Phase 4 Building Cleaning and Demolition
East Helena MT.

Decontamination procedures for a full negative pressure enclosure

NOTE: OSHA 1926.65 requires all employees, visitors, and emergency response personnel to receive instructions from a <u>designated company representative</u> before entering areas where hazardous waste operations are being conducted.

ENTER:

- 1. Enter the decontamination area through the clean room.
- 2. Remove street clothing and jewelry and place into assigned lockers. Check Respirator for defects and replace as needed.
- 3. DO NOT apply cosmetics, eat, drink, smoke, chew gum or tobacco once inside the decontamination area or work area.
- 4. Put on PPE (i.e., coveralls, respirator, boot covers, gloves)
- 5. Check respirator using positive/negative pressure test.
- 6. Pass through airlock doorways to shower area, equipment area and into the work area.

EXIT:

MICOTURE.

- Remove PPE (EXCEPT RESPIRATOR) in the equipment room. The
 equipment room is designated for this purpose, with containers for used PPE. This
 area should be kept organized and free of asbestos and asbestos contaminated
 materials at all times.
- 2. Re- usable PPE such as boots, hard hats, safety glasses, can be cleaned and left inside the equipment room to be used upon re-entry to the work area. These items must be completely cleaned in the equipment room and in the shower if they are to be removed from the work area.
- Proceed to the shower still wearing respirator. Wash body and respirator
 completely. Discard used water soaked respirator cartridges by reaching through
 the airlock, back into the equipment room and dropping them into the waste
 container provided.
- Pass through the last air-lock and into the clean room. Dry off, and re-dress.
 Disinfect/clean your respirator using procedures covered in IRSE respirator protection program.

NOIE:	and the EPA. Eating, drinking, smoking, chewing gum or tobacco				
	C, C, C,				
	or removing respirators inside a known regulated area is grounds for)T			
	immediate dismissal.				
Employee	or vicitors signature Date				

IDCE requires strict adherence to the guidelines established by OCHA

Employee or visitors signature	Date
Designated IRSE decontamination rep	resentative

ASARCO Phase 4 Building Cleaning and Demolition
East Helena MT.

Min enclosure Decontamination Procedures for use during Glove Bag Removal

A clean room will be established at the entrance to each mini enclosure constructed for glove bag removal work. The clean room will be constructed of 2 layers of 6 ml poly over wood frame. A HEPA vacuum will be used to remove asbestos contamination from the workers work suits before they leave the work area.

ENTRY

Workers will don two pairs of disposable coveralls over their street clothes and the appropriate respirator. Respirator fit will be checked using positive/negative pressure test. Next, workers will pass through the clean room into the mini enclosure to begin the glove bag and cut and wrap work.

EXIT

Worker will remove outer layer of coverall and place in an asbestos disposal bag, then immediately enter the clean room and remove the asbestos contamination from the inner tyvek coverall using a HEPA vacuum. After a thorough HEPA cleaning, the worker may remove the inner tyvek coverall, and proceed to the three stage decontamination center with shower for secondary decontamination.

<u>NOTE:</u> OSHA 1926.65 requires all employees, visitors, and emergency response personnel to receive instructions from a <u>designated company representative</u> before entering areas where hazardous waste operations are being conducted.

Employee or visitors signature	Date	
Designated IRSE decontamination representative		

ASARCO Phase 4 Building Cleaning and Demolition
East Helena MT.

Preparation of work area for Class One Asbestos Removal

PRE-WORK SAFETY REQUIREMENTS:

- 1. Review at initial safety meeting: IRSE MSDS for spray adhesives.
- 2. <u>Review at initial safety meeting:</u> Emphasize the importance of ventilating the work area to reduce exposure to vapors while using spray glue.
- 3. Lock out / Tag out all HVAC and un used circuits within work area before beginning work.

PERSONAL PROTECTIVE EQUIPMENT:

- 1. 1/2 face air purifying respirator with HEPA (purple) filters if friable damaged asbestos is encountered during work area preparation.
- 2. Disposable coveralls if friable damaged asbestos is encountered during work area preparation.
- 3. Safety glasses.

PROPER PREPARATION STEPS:

- 1. Seal all critical barriers at work area perimeter with double layer of 6ml poly.
- 2. Lock out / tag out HVAC system and un-used circuits in work area.
- 3. Seal all critical HVAC openings with double layer of 6ml poly.
- 4. Install 6ml poly floors and walls. All horizontal and vertical surfaces will be covered within the work area.
- 5. Cover all objects within the work area with 6ml poly secured with duct tape.
- 6. Install second layer of 6ml poly drop sheets over all surfaces.
- 7. Install adequate Air Filtration Devices to insure 6 air changes per hour or more. Install the Air Filtration Devices in a manner which directs the airflow away from the breathing zone of the workers.
- 8. Allow Air Filtration Devices to run continuously for one to two hours before removal begins to insure integrity of circuits.
- 9. Install a Two Stage decontaminating decon, the crew will remote to a Three Stage Decon

Employees signature	Date
Supervisors signature	Date

ASARCO Phase 4 Building Cleaning and Demolition
East Helena MT.

Preparation of work area for class one thermal system insulation materials removal using cut and wrap / glove bag removal methods

PRE-WORK SAFETY REQUIREMENTS:

- 1. Review at initial safety meeting: IRSE MSDS for spray adhesives.
- 2. <u>Review at initial safety meeting:</u> Emphasize the importance of ventilating the work area to reduce exposure to vapors while using spray glue.

PERSONAL PROTECTIVE EQUIPMENT:

- 1. 1/2 face air purifying respirator purple and black filter cartridges. While using spray glue.
- 2. Safety glasses.

PROPER PREPARATION STEPS:

- 1. Post 3" DANGER ASBESTOS barrier tape at work area perimeter to restrict access of untrained personnel
- 2. Seal all critical barriers at work area perimeter with double layer of 6ml poly.
- 3. Install 6ml poly floors under thermal system insulation to be removed.
- 4. Install adequate Air Filtration Devices to insure 6 air changes per hour or more. Install the Air Filtration Devices in a manner which directs the airflow away from the breathing zone of the workers.
- 5. Allow Air Filtration Devices to run continuously for one to two hours before removal begins to insure integrity of circuits.
- 6. Install "Danger Asbestos" Signs at work area entrance.
- 7. Install Three Stage decontamination center and two stage waste load out before removal begins.

Employees signature	Date
Supervisors signature	Date

ASARCO Phase 4 Building Cleaning and Demolition East Helena MT.

VCI Removal

This activity involves removal of a Class II building material. All other methods of compliance such as HEPA vacuums, wet methods, prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

WORK AREA PREPARATION:

- 1. <u>Review at initial safety meeting:</u> each worker at initial safety meeting must complete IRSE Solvent Safety Checklist.
- 2. <u>Review at initial safety meeting:</u> Emphasize the importance of ventilating the work area to reduce fire hazard and exposure to vapors.

PERSONAL PROTECTIVE EQUIPMENT:

- 1. Disposable polypropylene or Tyvek coveralls.
- Full Face Air Purifying Pressure Respirator.
- Latex gloves.
- 4. Ear Plugs

REMOVAL PROCEDURES:

- 1. Prepare negative pressure enclosure/work area as per written procedures.
- 2. Pre wet the material before removal. Spray the material with a fine spray of amended water. Wet the material and allow the water to soak into the material until it is wet enough to remove without causing visible emissions, but not so wet as to damage ceiling substrate below.
- Vacuum the material while damp and continue to spray with water as necessary to prevent visible emissions.
- 4. Remove gross contamination from tools and protective clothing before proceeding to the de-con chamber. Proceed to the equipment room and wash your tools and equipment. The tools and equipment must be cleaned or placed in clean bag prior to removal from work area.
- 5. Take containerized waste to the waste load-out. Wet wash /wipe the bag in the equipment room before passing it into a clean asbestos disposal bag held by a worker in the second clean room.
- 6. The second bag will be sealed immediately and placed in a locked covered secure storage dumpster or truck for transport and disposal.

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East Helena MT.

VCI Removal

Employees signature	Date
Supervisor signature	Date

ASARCO Phase 4 Building Cleaning and Demolition East Helena, Montana

Trailer Mounted Vacuum Operation

PRE-WORK SAFETY REQUIREMENTS:

- 1) Review at initial safety meeting: IRS Environmental MSDS for material(s) being vacuumed.
- 2) Review at initial safety meeting: Emphasize the importance of working in pairs, proper use of pop-off valves, air horns, radio communication, ear protection, safety glass, confined space and fall protection plan.
- 3) Review at initial safety meeting: When performing the daily safety meeting, document where the mechanical relief valve is located at on the vacuum line and also who will be the monitor of the relief valve.

PERSONAL PROTECTION EQUIPMENT:

- 1) Half face air purifying respirator for interior cleaning and soil removal.
- 2) Full face powered air purifying respirator for attic space removal.
- 3) Hearing protection
 - a. Ear muffs and/or disposalable ear plugs.
- 4) Hard hats
- 5) Safety glasses
- 6) Disposable polypropylene coveralls
- 7) Gloves
 - a. Leather style
 - b. Rubber

PROPER OPERATION STEPS:

- 1) Perform all maintenance checks
- 2) Ensure truck is on level and secure ground
- 3) Ensure that all body doors are closed
- 4) Properly connect vacuum hoses as required
- 5) Safe guards against dust explosions

VACUUM SAFETY:

- 1) When vacuuming around anything energized, examples (electrical, hydraulic, lock-out/tag out procedures will need to be performed.
- 2) Use gaskets at all times to ensure that there will be no water leaks or vacuum leaks.
- 3) Keep hands, clothing and feet away from the ends of the hose and pipes. Should you looses any items into the house; **DO NOT TRY TO RETRIEVE IT.**Allowing any body part to be pulled into the vacuum hose could be deadly.
- 4) Always follow confined space procedures when entering a confined area.
- 5) When working above the ground, you must follow the fall protection plan.
- 6) Do not operate vacuum truck RPM higher than what is needed to perform the job at hand; this could lead to damage of the vacuum hose and filters in the bag house.

- 7) Install in the vacuum line, a mechanical relief valve (pop-off valve). The mechanical relief valve will reduce and/or eliminate the possibility of an operator being injured by the vacuum hose, which could pull the operator or their loose clothing into the hose. The relief valve can be used in a 4 inch, 6 inch and 8 inch lines and will provide vacuum relief up to 27" of mercury.
- 8) When equipment is under vacuum pressure, the operator shall never leave person(s) handling the vacuum hose unattended
- 9) Visual contact must always be present when possible between the operator and the person(s) handling the vacuum hose. When performing the daily safety meeting document what procedures will be used to maintain this contact.
- 10) If visual contact is not feasible, other methods will be used, an air horn system, two-way radio communications, a safety monitor and/or a hand held remote control system held by the person vacuuming. A person can press a switch and shut down the vacuum truck if there are any problems.
- 11) Any system used to notify the operator of the vacuum truck will be tested before work begins.

Supervisor's Signature	Date
Employee's Signature	Date

ASARCO Phase 4 Building Cleaning and Demolition East Helena MT.

Boiler Flange Gasket Removal Method

This activity involves removal of a Class II building material. All methods of compliance such as HEPA vacuums, wet methods, prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

PRE-WORK SAFETY REQUIREMENTS:

- 1. <u>Review at initial safety meeting:</u> IRSE power tool safety checklist. Review reciprocating saw safety features and requirements prior to operation.
- 2. <u>Review at initial safety meeting:</u> Operation of reciprocal saws requires safety glassed at all times during operation!!

PERSONAL PROTECTIVE EQUIPMENT:

The following personal protective equipment will be worn until a site-specific negative exposure assessment is obtained.

- 1. Disposable polypropylene coveralls.
- 2. 1/2 face air purifying respirator with HEPA cartridges.
- 3. Safety glasses.
- 4. Disposable clothe gloves

- 1. This work is to be completed inside an existing negative pressure mini enclosure installed for Class I removal of TSI.
- 2. Thoroughly pre-wet the gasket with amended water, and then scrape the gasket clean with a sharp putty knife.
- 3. Immediately place all waste in two layer 6ml disposal bags and place in a disposal dumpster, holding area or enclosed transportation van no later than the end of the work shift.

Employees signature	Date
Supervisors signature	Date

ASARCO Phase 4 Building Cleaning and Demolition East Helena MT.

Class II Removal of Asphalt Asbestos Roofing, Mastic on rolled or Tab Roofing from Roof

PRE-WORK SAFETY REQUIREMENTS:

- 1. This work activity requires a site specific fall protection plan! Make sure one is on site before beginning roofing removal.
- 2. <u>Review site specific fall protection plan before any removal begins</u> at initial safety meeting. All workers new to the job site are required to review the fall protection plan and these work procedures before starting work.
- 3. Fall protection must be inplace and inspected by IRSE Project Manger prior to working on roof.

PERSONAL PROTECTIVE EQUIPMENT:

- 1. Disposable polypropylene coveralls or
- 2. Cloth coveralls
- 3. 1/2 face air purifying respirator purple (HEPA) filter cartridges.
- 4. Safety glasses.
- 5. Disposable cloth gloves.

- 1. Lay 10 20 ft. drop sheet extending from base of structure to work area perimeter.
- 2. Install 2" "DANGER ASBESTOS" tape at work area perimeter to restrict access of non-certified trades.
- 3. Remove the material as intact as possible.
- 4. Roofing must be removed as wet as is feasible.
 - Use water carefully.
 - Using water on pitched roofs creates a slip and fall hazard, use only light wetting and follow all fall protection guidelines.
- 5. Control dust by using effective methods of lowering roofing debris to the disposal container.
 - A. Lower unbagged /unwrapped ACM immediately to the ground via dust tight chute never allow unbagged roofing to accumulate on the roof, or:
 - B. Bag or wrap ACM roofing in poly sheeting while it is on the roof. All bagged or wrapped waste must be in the waste disposal transportation container or cube van no later than the end of the workshift.
- 6. Unwrapped roofing must be placed in a lined, closed, covered dumpster or truck.

Employees signature	Date
Supervisors signature	Date

ASARCO Phase 4 Building Cleaning and Demolition East Helena MT.

Class II Roof putty Sealant Removal

PRE-WORK SAFETY REQUIREMENTS:

- 1. <u>This work activity requires a site-specific fall protection plan!</u> Make sure one is on site before beginning roofing removal.
- 2. <u>Review site-specific fall protection plan before any removal begins</u> at initial safety meeting. All workers new to the job site are required to review the fall protection plan and these work procedures before starting work.

PERSONAL PROTECTIVE EQUIPMENT:

The following personal protective equipment will be worn until a negative exposure assessment can be made.

- 1. 1/2 face air purifying respirator.
- 2. Safety glasses.
- 3. Disposable cloth gloves.
- 4. Disposable cloth coveralls.

- 1. Keep putty moist during removal and demolition activities.
- 2. Keep putty intact during removal and demolition activities.
- 3. Wet and separate putty using manual methods after it is exposed.
- 4. Remove putty intact with the metal roofing, and wrap immediately or place in lined dumpster for storage and transportation.
- 5. If putty needs to be separated from metal roofing, use a flat sharp hand tool and place putty immediately into asbestos disposal bags.
- All Bagged or wrapped waste must placed in locked disposal dumpster or enclosed transportation van no later than the end of the work shift.

Employees signature	Date
Supervisors signature	Date
Supervisors signature	Date

ASARCO Phase 4 Building Cleaning and Demolition East Helena, Montana

Metalbestos Siding and Roofing Removal Methods

PRE-WORK SAFETY REQUIREMENTS:

- 1. <u>Review at initial safety meeting:</u> Cutting, abrading or sanding metalbestos panels is prohibited.
- 2. <u>Review at initial safety meeting:</u> Intentionally breaking metalbestos panels is prohibited.

PERSONAL PROTECTIVE EQUIPMENT:

- 1. Disposable polypropylene coveralls.
- 2. 1/2 face air purifying respirator.
- 3. Safety glasses.
- 4. Disposable cloth gloves.

- 1. Lay 10 20 ft. drop sheet extending from base of panel surface to work area perimeter.
- 2. Install 2" "DANGER ASBESTOS" tape at work area perimeter to restrict access of non-certified trades.
- 3. Wet each panel or shingle before removal.
- 4. Cut nails with flat sharp hand tool.
- 5. Carefully remove wet shingle or panel to minimize breakage
- 6. Immediately lower panels or shingles to the ground.
- 7. Immediately bag or wrap CAB in labeled 6ml poly sheeting. All bagged or wrapped waste must placed in locked disposal dumpster or enclosed transportation van no later than the end of the work shift.

Employees signature	Date
Supervisors signature	Date

ASARCO Phase 4 Building Cleaning and Demolition
East Helena, Montana

Vacuum Lead Dust Cleaning from inside of the Blast Furnace Flue

PRE-WORK SAFETY REQUIREMENTS:

- 1. <u>Review at safety meeting:</u> Workers will not eat, drink, smoke, or apply cosmetics inside the lead control work area. These activities are prohibited until the employee has left the lead control work area, passed through the hygiene facility and washed thoroughly.
- 2. <u>Review at safety meeting:</u> No employee will be allowed to enter the demarcated area without attending a Lead in Construction class that meets the requirements of 29 CFR 1926.62 and WAC 296-62-054 through 05427.

WORK AREA PREPARATION:

- 1. <u>All work under these procedures will take place within a demarcated lead control area.</u> The boundaries of the work area will be clearly visible. 3" Barrier tape and caution signs will meet specifications called for in 29 CFR 1926.62.
- 2. <u>Prepare work area</u> by installing 6 ml drop sheets at the entrance to the work area.
- Seal doors, install barriers to create negative pressure enclosure and prohibit migration of lead dust beyond lead control area.
- 4. <u>Install Hygiene station for hand washing</u> prior to meals, breaks, and leaving the work area.

PERSONAL PROTECTIVE EQUIPMENT:

- Until exposure assessment determines worker exposure levels to be below the action level of 30ug/m3 (averaged over an eight hour period) all personnel performing scraping or brushing operations will wear the following personal protective equipment:
 - 1/2 face air purifying respirator
 - Tyvek coveralls
 - Safety goggles or glasses
 - Disposable cloth work gloves
 - Ear protection
- 2. When results of exposure assessment are below 15 ug/m3, workers will wear the following personal protective equipment:
 - Re-usable cloth coveralls.
 - Re-usable cloth gloves.
 - 1/2 face air purifying respirator.
 - Safety glasses or goggles

REMOVAL PROCEDURES:

- 1. Personal protective equipment, work boots, and disposable cloth coveralls will be vacuumed and left within the work area before proceeding to the *hygiene facilities* (hand and face wash station). Until exposure assessment indicates airborne lead concentrations below 30ug/m3, a thorough hand and face wash will be performed immediately following removal of protective clothing and upon leaving the lead control area.
- 2. A remote three stage decon will be provided for change area, its use is required. Storage areas for your street clothes will be provided.
- The industrial vacuum will be used to clean up the lead dust through out the flue, IRSE employees will also use small brushes to remove the material from the interior top portion of the flue that is not reachable with the vacuum attachments.
- 4. In the unlikely event that airborne lead levels reach 1/2 of the action level(15ug/m3), all work will stop until work practices can be modified, and or engineering controls can be installed to reduce airborne lead levels.
 - In the unlikely event that airborne levels of lead exceed 30ug/m3 all effected employees will be required to participate in blood sampling and analysis for lead and zinc protoporphirin levels. Each employee receiving blood monitoring shall be notified of the results within five working days after IRS receives the results. (See IRS Medical surveillance program for lead removal, employee orientation)
- Eight hour representative personnel sampling will be conducted for the task or tasks within the work area that generate the most airborne lead concentrations. All monitoring and analysis will be performed according to NIOSH Method 7082 or equivalent. All employees will be notified of the results of this analysis within five days of the exposure assessment. Exposure assessments will continue as conditions change throughout cleaning project.

CLEAN UP AND DISPOSAL PROCEDURES:

- 1. Clean up all lead dust debri by the end of each workshift. At no time will visible dust debris be tracked or allowed to migrate from the lead control work area.
- Place all lead dust waste in labeled and designated disposal drum prior to the end of each workshift.
- 3. All drums must be dated, sealed, labeled and stored in the designated hazardous waste storage area.

Supervisor/Trainer	Date
Employee	

ASARCO Phase 4 Building Cleaning and Demolition East Helena MT.

Flange gasket and packing rope removal - furnace seals and joints and expansion joints,

This activity involves removal of a Class II building material. All methods of compliance such as HEPA vacuums, wet methods, prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

PRE-WORK SAFETY REQUIREMENTS:

- 1. <u>Review at initial safety meeting:</u> IRSE power tool safety checklist. Review reciprocating saw safety features and requirements prior to operation.
- 2. <u>Review at initial safety meeting:</u> Operation of reciprocal saws requires safety glassed at all times during operation!!

PERSONAL PROTECTIVE EQUIPMENT:

The following personal protective equipment will be worn until a site specific negative exposure assessment is obtained.

- 1. Disposable polypropylene coveralls.
- 2. 1/2 face air purifying respirator with HEPA cartridges.
- Safety glasses.
- 4. Disposable cloth gloves

- Post 3" DANGER ASBESTOS barrier tape at work and DANGER ASBESTOS signs at all approaches and access points to the regulated work area to restrict access of untrained personnel
- 2. Set up a mini enclosure around the abatement area.
- 3. Wet any exposed lining or gasket material. Wrap tightly and securely with 6 ml poly and duct tape. Cut entire fitting or duct out by cutting pipe or on each side of fitting with reciprocating saw or band saw, leaving gasket in place and intact.
- 4. Immediately place all waste in two layer 6ml disposal bags and place in locked disposal dumpster, holding area or enclosed transportation van no later than the end of the work shift.

Employees signature	Date
Supervisors signature	Date

ASARCO Phase 4 Building Cleaning and Demolition East Helena MT.

Cutting through VAT and asbestos cutback mastic on wood sub-flooring

This activity involves making a Class II building material friable requires specific engineering controls, respirator protection and a regulated work area. Personnel air monitoring and daily exposure assessment is required. Methods of compliance such as HEPA vacuums, wet methods and prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

PRE-WORK SAFETY REQUIREMENTS:

- 1. <u>Review at initial safety meeting:</u> power tool cutting, abrading or sanding sheet flooring prohibited by Class II workers.
- 2. VAT and mastic contain asbestos and should be kept wet during cutting activities.
- 3. High speed cutting or abrasive disc saws must be equipped with point of cut vacuum hose attached to HEPA vacuum.
- 4. Dry sweeping, shoveling of other dry clean up of dust and debris is not allowed.

PERSONAL PROTECTIVE EQUIPMENT:

- 1. Full bodied polypropylene coveralls.
- 2. Full face piece supplied air respirator operated in pressure demand mode, equipped with HEPA filter egress cartridges will be used until exposure assessment provides for downgrading to lesser protection.
- 3. Powered air-purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 10 f/cc (TWA).
- 4. Full face piece air purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 5 f/cc (TWA).
- 5. 1/2 face air purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 1 f/cc (TWA). 3. Safety glasses.
- 6. Disposable cloth gloves.

- 1. Seal all critical barriers at work area perimeter.
- 2. Post full size DANGER ASBESTOS sign at work area entrance to restrict access of untrained personnel.
- 3. Lay drop sheet at entrance to work area for clean area.
- 4. Score, wet and remove single strip of vinyl floor tile (VAT) at cutting point.
- 5. Wet wood / asbestos mastic surface with amended water.
- 6. Cut through wood substrate with high speed cutting or abrasive disc saw equipped with point of cut vacuum hose attached to HEPA vacuum.
- 7. Immediately clean up all wood, mastic and tile dust with HEPA Vacuum.

 Area must be cleaned of all debris prior to flooring removal by Class II workers.
- 8. All bagged, wrapped waste must placed in locked disposal dumpster, holding area or enclosed transportation van no later than the end of the work shift.

Employees signature	Date
Supervisor's signature	Date

ASARCO Phase 4 Building Cleaning and Demolition East Helena, Montana

Metalbestos Siding and Roofing Removal Methods

PRE-WORK SAFETY REQUIREMENTS:

- 1. <u>Review at initial safety meeting:</u> Cutting, abrading or sanding metalbestos panels is prohibited.
- 2. <u>Review at initial safety meeting:</u> Intentionally breaking metalbestos panels is prohibited.

PERSONAL PROTECTIVE EQUIPMENT:

- 1. Disposable polypropylene coveralls.
- 2. 1/2 face air purifying respirator.
- 3. Safety glasses.
- 4. Disposable cloth gloves.

- Lay 10 20 ft. drop sheet extending from base of panel surface to work area perimeter.
- 2. Install 2" "DANGER ASBESTOS" tape at work area perimeter to restrict access of non-certified trades.
- 3. Wet each panel or shingle before removal.
- 4. Cut nails with flat sharp hand tool.
- 5. Carefully remove wet shingle or panel to minimize breakage
- 6. Immediately lower panels or shingles to the ground.
- 7. Immediately bag or wrap CAB in labeled 6ml poly sheeting. All bagged or wrapped waste must placed in locked disposal dumpster or enclosed transportation van no later than the end of the work shift.

Employees signature	Date
Supervisors signature	Date

ASARCO Phase 4 Building Cleaning and Demolition East Helena, Montana

Vacuum Lead Dust Cleaning from inside of the Blast Furnace Flue

PRE-WORK SAFETY REQUIREMENTS:

- 1. <u>Review at safety meeting:</u> Workers will not eat, drink, smoke, or apply cosmetics inside the lead control work area. These activities are prohibited until the employee has left the lead control work area, passed through the hygiene facility and washed thoroughly.
- 2. <u>Review at safety meeting:</u> No employee will be allowed to enter the demarcated area without attending a Lead in Construction class that meets the requirements of 29 CFR 1926.62 and WAC 296-62-054 through 05427.

WORK AREA PREPARATION:

- 1. All work under these procedures will take place within a demarcated lead control area. The boundaries of the work area will be clearly visible. 3" Barrier tape and caution signs will meet specifications called for in 29 CFR 1926.62.
- 2. <u>Prepare work area</u> by installing 6 ml drop sheets at the entrance to the work area.
- Seal doors, install barriers to create negative pressure enclosure and prohibit migration of lead dust beyond lead control area.
- 4. <u>Install Hygiene station for hand washing</u> prior to meals, breaks, and leaving the work area.

PERSONAL PROTECTIVE EQUIPMENT:

- 1. Until exposure assessment determines worker exposure levels to be below the action level of 30ug/m3 (averaged over an eight hour period) all personnel performing scraping or brushing operations will wear the following personal protective equipment:
 - 1/2 face air purifying respirator
 - Tyvek coveralls
 - Safety goggles or glasses
 - Disposable cloth work gloves
 - Ear protection
- 2. When results of exposure assessment are below 15 ug/m3, workers will wear the following personal protective equipment:
 - Re-usable cloth coveralls.
 - Re-usable cloth gloves.
 - 1/2 face air purifying respirator.
 - Safety glasses or goggles

REMOVAL PROCEDURES:

- 1. Personal protective equipment, work boots, and disposable cloth coveralls will be vacuumed and left within the work area before proceeding to the **hygiene facilities** (hand and face wash station). Until exposure assessment indicates airborne lead concentrations below 30ug/m3, a thorough hand and face wash will be performed immediately following removal of protective clothing and upon leaving the lead control area.
- 2. A remote three stage decon will be provided for change area, its use is required. Storage areas for your street clothes will be provided.
- 3. The industrial vacuum will be used to clean up the lead dust through out the flue, IRSE employees will also use small brushes to remove the material from the interior top portion of the flue that is not reachable with the vacuum attachments.
- 4. In the unlikely event that airborne lead levels reach 1/2 of the action level(15ug/m3), all work will stop until work practices can be modified, and or engineering controls can be installed to reduce airborne lead levels.
 - In the unlikely event that airborne levels of lead exceed 30ug/m3 all effected employees will be required to participate in blood sampling and analysis for lead and zinc protoporphirin levels. Each employee receiving blood monitoring shall be notified of the results within five working days after IRS receives the results. (See IRS Medical surveillance program for lead removal, employee orientation)
- Eight hour representative personnel sampling will be conducted for the task or tasks within the work area that generate the most airborne lead concentrations. All monitoring and analysis will be performed according to NIOSH Method 7082 or equivalent. All employees will be notified of the results of this analysis within five days of the exposure assessment. Exposure assessments will continue as conditions change throughout cleaning project.

CLEAN UP AND DISPOSAL PROCEDURES:

- Clean up all lead dust debri by the end of each workshift. At no time will visible dust debris be tracked or allowed to migrate from the lead control work area.
- Place all lead dust waste in labeled and designated disposal drum prior to the end of each workshift.
- 3. All drums must be dated, sealed, labeled and stored in the designated hazardous waste storage area.

Supervisor/Trainer	Date
Employee	

ASARCO Phase 4 Building Cleaning and Demolition
East Helena MT.

Flange gasket and packing rope removal - furnace seals and joints and expansion joints,

This activity involves removal of a Class II building material. All methods of compliance such as HEPA vacuums, wet methods, prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

PRE-WORK SAFETY REQUIREMENTS:

- 1. <u>Review at initial safety meeting:</u> IRSE power tool safety checklist. Review reciprocating saw safety features and requirements prior to operation.
- 2. <u>Review at initial safety meeting:</u> Operation of reciprocal saws requires safety glassed at all times during operation!!

PERSONAL PROTECTIVE EQUIPMENT:

The following personal protective equipment will be worn until a site specific negative exposure assessment is obtained.

- 1. Disposable polypropylene coveralls.
- 2. 1/2 face air purifying respirator with HEPA cartridges.
- Safety glasses.
- 4. Disposable cloth gloves

- Post 3" DANGER ASBESTOS barrier tape at work and DANGER ASBESTOS signs at all approaches and access points to the regulated work area to restrict access of untrained personnel
- 2. Set up a mini enclosure around the abatement area.
- 3. Wet any exposed lining or gasket material. Wrap tightly and securely with 6 ml poly and duct tape. Cut entire fitting or duct out by cutting pipe or on each side of fitting with reciprocating saw or band saw, leaving gasket in place and intact.
- 4. Immediately place all waste in two layer 6ml disposal bags and place in locked disposal dumpster, holding area or enclosed transportation van no later than the end of the work shift.

Employees signature	Date	
Supervisors signature	Date	

ASARCO Phase 4 Building Cleaning and Demolition
East Helena MT.

Cutting through VAT and asbestos cutback mastic on wood sub-flooring

This activity involves making a Class II building material friable requires specific engineering controls, respirator protection and a regulated work area. Personnel air monitoring and daily exposure assessment is required. Methods of compliance such as HEPA vacuums, wet methods and prompt clean up apply. Use of compressed air to remove ACM Materials is not allowed.

PRE-WORK SAFETY REQUIREMENTS:

- 1. <u>Review at initial safety meeting:</u> power tool cutting, abrading or sanding sheet flooring prohibited by Class II workers.
- VAT and mastic contain asbestos and should be kept wet during cutting activities.
- High speed cutting or abrasive disc saws must be equipped with point of cut vacuum hose attached to HEPA vacuum.
- 4. Dry sweeping, shoveling of other dry clean up of dust and debris is not allowed.

PERSONAL PROTECTIVE EQUIPMENT:

- 1. Full bodied polypropylene coveralls.
- Full face piece supplied air respirator operated in pressure demand mode, equipped with HEPA filter egress cartridges will be used until exposure assessment provides for downgrading to lesser protection.
- 3. Powered air-purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 10 f/cc (TWA).
- 4. Full face piece air purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 5 f/cc (TWA).
- 5. 1/2 face air purifying respirators can be worn if exposure assessment indicates airborne asbestos breathing zone sample results less than 1 f/cc (TWA). 3. Safety glasses.
- 6. Disposable cloth gloves.

- 1. Seal all critical barriers at work area perimeter.
- Post full size DANGER ASBESTOS sign at work area entrance to restrict access of untrained personnel.
- 3. Lay drop sheet at entrance to work area for clean area.
- 4. Score, wet and remove single strip of vinyl floor tile (VAT) at cutting point.
- 5. Wet wood / asbestos mastic surface with amended water.
- Cut through wood substrate with high speed cutting or abrasive disc saw equipped with point of cut vacuum hose attached to HEPA vacuum.
- Immediately clean up all wood, mastic and tile dust with HEPA Vacuum.
 Area must be cleaned of all debris prior to flooring removal by Class II workers.
- 8. All bagged, wrapped waste must placed in locked disposal dumpster, holding area or enclosed transportation van no later than the end of the work shift.

Employees signature	Date
Supervisor's signature	Date

ASARCO Phase 4 Building Cleaning and Demolition East Helena MT

Window putty removal, intact removal methods

PRE-WORK SAFETY REQUIREMENTS:

- 1. This work activity may require a site specific fall protection plan! Make sure one is on site before beginning removal.
- 2. <u>Review site specific fall protection plan before any removal begins</u> at initial safety meeting. All workers new to the job site are required to review the fall protection plan and these work procedures before starting work.
- 3. <u>Review at initial safety meeting:</u> Cutting, abrading or sanding window putty is prohibited.
- 4. <u>Review at initial safety meeting:</u> Intentionally breaking Windows and Putty is prohibited.
- 5. This activity has a high possibility for cuts and lacerations. If necessary, tape windows to minimize shatter. Always wear safety glasses during window removal activities.
- 6. This activity requires a barricade to control access below window removal. Eliminate risk of people walking below window removal operations!!

PERSONAL PROTECTIVE EQUIPMENT:

- 1. 1/2 face air purifying respirator.
- 2. Safety glasses.
- 3. Disposable cloth gloves.

- 1. Lay 10 20 ft. drop sheet extending from base of building to work area perimeter.
- 2. Tape glass to minimize shatter.
- 3. Wet each widow before removal.
- 4. Remove and set aside trim board and shims.
- 5. Carefully remove wet window to minimize breakage
- 6. Immediately lower windows to the ground, scaffold or manlift surface, either manually or via dust tight chute.
- 7. Placed whole intact windows in a lined box, locked enclosed transportation container no later than the end of the work shift.

Employees signature	Date
Supervisors signature	Dare

Appendix D Fall Protection Plan

FALL PROTECTION WORK PLAN

A written fall protection work plan must be implemented by each employer on a job site where a fall hazard of 10 feet or greater exists, in accordance with Department of Labor and Industries, WISHA Regulations. The plan must be specific for each work site.

THIS WORK PLAN WILL BE AVAILABLE ON THE JOB SITE FOR INSPECTION.

Attached is a sample of a model fall protection work plan that may be filled out by each employer who has employees exposed above 10 feet. The following steps will help you fill out your plan.

1. FILL OUT THE SPECIFIC JOB INFORMATION.

Company Name:

IRS ENVIRONMENTAL OF WA

Job Name:

Date:

ASARCO Phase 4 Building Cleaning and Demolition

April 17, 2007

Job Address:

City:

100 Smelter Road

East Helena

Job Foreman:

Jobsite Phone:

Mark Kazemba

509-844-4267

2. FALL HAZARDS IN THE WORK AREA

INCLUDE LOCATIONS AND DIMENSIONS FOR HAZARDS

Elevator shaft: N/A

Stairwell: Stairs along the outside of the

building coming from the floors above.

Leading edge: N/A

Window opening: When windows have

been removed from the jam

Outside static line: N/A

Roof eave height: Various sizes

Perimeter edge: working from roof

Roof perimeter dimensions: N/A

Other fall hazards in the work area: Working from the man-basket of a all terrain articulating man lift and scissors lifts

3. METHOD OF FALL ARREST OR FALL RESTRAINT

(For fall protection equipment include details, such as manufacturer etc.)

Body belt (Restraint only): Full body harness: Used while working in the manlift N/A Lanyard: Dropline: Will be attached to anchor point with in N/A the man lift basket Lifeline: Restraint line: Working on flat roofs Working from the roof Horizontal lifeline: Rope grab: N/A Working from roof – safety lines Shock absorbing lanyard: Deceleration device: Will be attached to anchor point with in Used with conjunction with lanyard the man lift basket Locking snap hooks: Safety nets: Used on the ends of the lanyards N/A Guard rails: Anchorage points: The approved by the manufacture of the N/A manlift spot to attach a lanyard wit ha locking snap hook Scaffolding platform: Catch platform: N/A N/A Safety monitor: Name of monitor, if used: To be used on the roofs Other:

4. ASSEMBLY, MAINTENANCE, INSPECTION, DISASSEMBLY PROCEDURE

Assembly and disassembly of all equipment will be done according to manufacturers' recommended procedures.

(Include copies of manufacturer's data for each specific type of equipment used.)

Specific types of equipment on the job are:

Full body harnesses, lanyards and manlift

A visual inspection of all safety equipment will be done daily or before each use, as stated in the Employee Training Packet. Any defective equipment will be tagged and removed from use immediately. The manufacturer's recommendations for maintenance and inspection will be followed.

5. HANDLING, STORAGE & SECURING OF TOOLS AND MATERIAL

Toe boards will be installed on all scaffolding to prevent tools and equipment from falling from scaffolding.

Other specific handling, storage and securing is as follows:

Scaffolding will not be used as of this time on site, if scaffolding is used the fall protection work plan will be amended to reflect the use of scaffolding.

6. OVERHEAD PROTECTION

Hard hats are required on all job sites with the exception of those that have no exposure to overhead hazards. Warning signs will be posted to caution of existing hazards whenever they are present. In some cases, debris nets may be used if a condition warrants additional protection.

Additional overhead protection will include:

No additional protection will be required at this time,

7. INJURED WORKER REMOVAL

Normal first aid procedures should be performed as the situation arises. If the area is safe for entry, the first aid should be done by a foreman or other certified individual.

Initiate Emergency Services - Dial 911 (where available)

Phone location: Job office an	nd cell phone on Supervision's
First aid location: Company	truck, decon trailer and company trailer, job box
Elevator location: N/A	
Crane location: N/A	
Other:	Location:

Rescue considerations. When personal fall arrest systems are used, the employer must assure that employees can be promptly rescued or can rescue themselves should a fall occur. The availability of rescue personnel, ladders, or other rescue equipment should be evaluated. In some situations, equipment that allows employees to rescue themselves after the fall has been arrested may be desirable, such as devices that have descent capability.

Describe methods to be used for the removal of the injured worker(s):

Injured worker will not be moved if the injured worker is safe from harms way. If the worker needs to be moved all precautions will be taken to not injury the worker anymore than what they are already.

8. TRAINING AND INSTRUCTION PROGRAM

All new employees will be given instructions on the proper use of fall protection devices before they begin work. They will sign a form stating they have been given this information. This form becomes part of the employee's personnel file.

The written fall protection work plan will be reviewed before work begins on the job site. Those employees attending will sign below. The fall protection equipment use will be reviewed regularly at the weekly safety meetings.

Date:			•
			
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Foreman or Job Superintendent:			,

Prior to permitting employees into areas where fall hazards exist, all employees must be trained regarding fall protection work plan requirements. Inspection of fall protection devices/systems must be made to ensure compliance with WAC 296-155-24

Appendix E

Notifications

APPLICATION FOR A MONTANA ASBESTOS PROJECT PERMIT AND NESHAP DEMOLITION/RENOVATION NOTIFICATION

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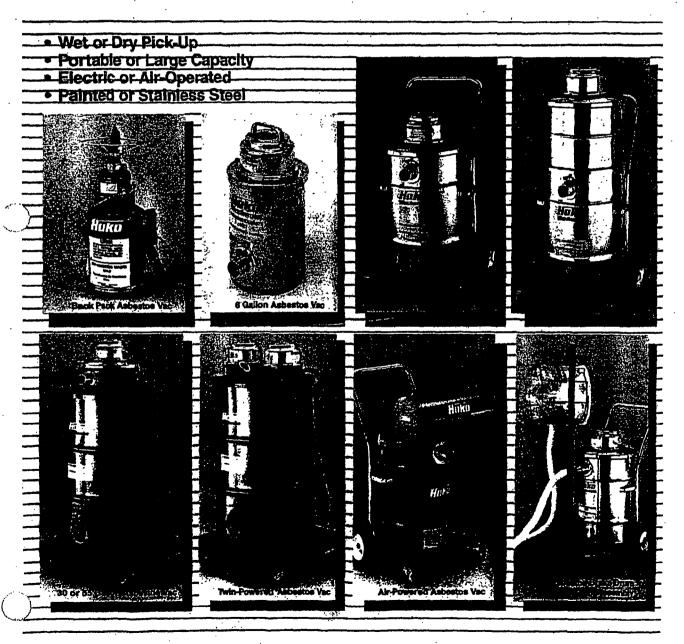
PROJECT P	ESIGN	NINFORMATION					
Print Name of Project Designer (PD)			(Accreditation Number/Exp. D	ate)			
RACM WASTE TRANSPORTER	75.57	V W IEI V Chacl	Maamaas Ahalameni Conirac	A STATE OF THE STA			
Contractor, Individual or Company Name							
Mailing Address	c	ily	State ZIp	County			
Telephone Number Fax Number			Contractor Contact Person (First and	Last Name)			
RACM WA	STED	ISPOSAL SITE		ા માં સામાં કું મુખ્યત્વે છે.			
Allied Waste Systems of Montana Missoula Landfill		Libby Class II I	_andfill				
Butte Silver Bow Government Landfill			Solid Waste Dist Landfill				
City of Billings Solid Waste Division Landfill			oint Refuse Disposal Dist Conra				
City of Hardin Class II Landfill			efuse Disposalitist Livingston				
City of Malta Landfill			ty Solid Waste Dist Sidney Land				
City of Shelby Landfill			ty Solide Vaste Dist Plentywood	Landfill			
Coral Creek Landfill			Refuse pish Glasgow Landfill				
Daniels County Commissions Scobey Landfill			ss II CCSS Littlene Landfill				
Flathead County Solid Waste District Kalispell Landfill	Ш	Other:		•			
High Plains Sanitary Landfill Site 1 - Great Falls/Floweree							
THIS SECTION APPLIES TO F							
I certify that the above information is correct and that a State-accredemolition/renovation. This Notice must be submitted to the Depart				estos prior to			
	<u>unent</u>	at reast 10 days					
Printed Name / Signature	4		Di	te			
THIS SECTION APPL	IES TO	ASBESTOS PE	OJECTS	A SAME LANGE CONTRACTOR			
I certify that all work performed pursuant to the authorization of the							
CFR 1926.1101, 40 CFR 763 subpart E, 40 CFR 763.120, 40 CFR (5) MCA, and ARM 17.74.301 through 406. In addition, I hereby certis transported properly and disposed of in a State-approved Class illustrates and the company of the comp	a pşb	estos-cuitainin	g waste materials removed duri	-2-501 through -519, ng this project will be			
Printed Name / Signs (1)	1		Da	te			
FOR ASBESTOS PROJECTS	PLEA	SE PROVIDE PE	R ARM 17.74,355				
 □ A. Project design. □ B. List of accredited asbestos processes with their accredit □ C. Copy of the contract showing the contract dollar amount □ D. Appropriate fee (see Fee Schedule below). 	ation	ID numbers and	expiration dates.				
CONTRACT VOLUME FEE CONTRACT VOLUME	ME	FEE	CONTRACT VOLUM	le fee			
\$0-\$500 \$7,501-\$10,000		\$417	\$75,001-\$100,000	\$3,627			
\$501-\$3,000 \$91 \$10,001-\$20,000 \$3,001-\$5,000 \$201 \$20,001-\$50,000		\$686	\$100,001-\$250,000	\$6,552			
\$3,001-\$5,000 \$201 \$20,001-\$50,000 \$5,001-\$7,500 \$50,001-\$75,000		\$1,531 \$2,652	\$250,001-\$375,000 Greater than \$375,000	\$13,416 \$20,000			
10,00147,000			0,000	\$20,000			
. <i>1</i>							
Actual Contract Volume Fee Amount Enclosed			Check No.	DEPOSIT LOG NO.			
Mail completed form and fee to: MT DEQ Asbestos Control Program, 1520 East 6th Avenue, PO Box 200901, Helena, MT 59620-0901							
Mont. Code Ann. § 75-2-503(2) requires the department to issue a permit asbestos abatement projects which cost \$3000 or less. For projects exce							
FOR EMERGENCY RENOVATIONS - APPLICATION	MUST	BE SUBMITTED	WITHIN FIVE DAYS OF NOTIFI	CATION			
Date of Emergency							
	plete Dat	.c <i>j</i>					
Description of the							
sudden, unexpected				····			
event.				·····			
		 -					

IF DEMOLITION IS ORDERED BY A GOVERNMENT AGENCY, SUBMIT COPY OF GOVERNMENT ORDER

Appendix F Material and Equipment Data



Series 800 Asbestos Vacuum Systems For Safe Control & Removal of Asbestos and Other Toxic Materials



All units equipped with H.E.P.A. filters with minimum 99.99% efficiency at 0.12 microns.

Critical Systems

CONTROLS (SPICE BOUTHES 4)



HEGATIVE PRESSURE SYSTEM

FEATURES:

- HEPA Fall Sale Switch
- *Four Easy Lift Handles
- *Cumulative Hour Meter
- *Static Pressure Gauge
- "Speed Selector Switch "12" Dia, Discharge
- *4" Heavy Duty Swivel Casters
- *18 Gauge Stainless Steel or
- *.090 inch Aluminum Construction
- *Intalia Adaptor Available

OPTIONAL ALARM SYSTEM

- "Normal (Run) Light
- *High Pressure (Filter Loading) -Audible &
- Visual Warning
- *Low Pressure (Blocked Discharge; Filter Rupture & Shutdown) - Audibie & Visual Warning

SPECIFICATIONS:

- "Two Speeds : 2100 CFM 1411 CFM
- "Dimensions : 38" Lx 37.5" H x 29" W
- *Weight: 180 bs. with filters Aluminum
 - 225 lbs. with filters Stainless
 - Water: 1 3/4Hp Thermally Protected
- *Power: 110 / 115 Velts / 80 Hz
- *Full Load Amps: :15.8 Amps
- *Circuit Protection: 20 Amps
- "Filters ; 24" x 24" x 1"
 - Primery. 24" x 24" x 2" Secondary

 - 24" x 24" x 11 1/2". HEPA



In a sticky situation? Then turn to...

ABATIX®

We've got what you need for adhesives

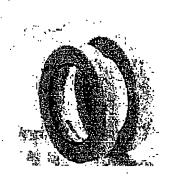


\$88.00/case

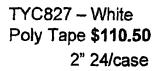
3 M

3M2090 Blue Painters Tape & 3M2020 Masking

1" 1.5" 2" 3" Call for Pricing



ABATIX® Brand
Duct Tape — Case
Quantities Only
2" 24/case or
3" 16/case



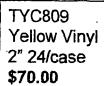


Nashua 398 2" 24/cs **\$94.50** & 3" 16/case **\$94.50** Silver

Premium 357 2" Silver \$168.75 Case Quantities Only

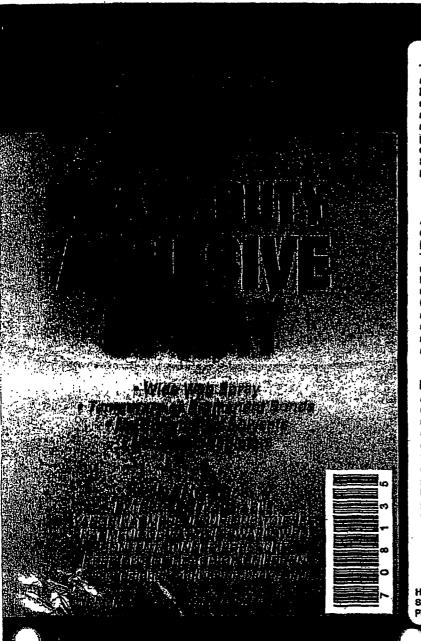
Abatix Corp 1808 B St NW Auburn WA 98001





Toll Free 1-800-500-8355

Prices good only through month of May



HEAVY DUTY ADHESIVE SPRAY

This wide web spray adhesive is one of the highest performance aerosol adhesives available. For both temporary or permanent bending, this high solids product is ideal for uneven or porous surfaces and weight materials. Waterproof flexible transparent and non-etaining, use this product for your toughest adhesive applications with materials such as leather, cardboard, most plastics, polyethylene sheeting and cloth. Formulated with the environment in mind, this product contains NO CHLORINATED SOLVENTS OR OZONE DEPLETERS. Cleans easily with Mineral Spirits. Not intended for use on viry).

DIRECTIONS

Always shake well before using. Never aim valve at face. Hold can upright and apply adhesive in a side to side motion 10 to 14 inches from surface.

TEMPORARY BONDS: Spray surface, allow to tack and apply material to be bonded.

PERMANENT BONDS: Liberally spray both surface and material, allow to tack, then apply.

CLEANING SPRAY TIP: When finished with a particular spray application, always turn can upside down and spray for two seconds to clear valve and prevent clogging. If adhesive accumulates around nozzle wipe clear while wet. If dried in valve opening, remove with degreasing solvent.

DANGER: Extremely Flammable. Contains Hexane and Acetone. Use with adequate ventilation. Keep away from heat, sparks, open flame or other ignition sources. Avoid inhabition of spray mist or vapors. If overcome, move patient to fresh air. Call a physician immediately. Avoid contact with eyes and skin. I case of eye contact, flush immediately with water and continue for 15 minutes. If imitation persists, see a physician. For skin contact, wash with soap and water. If imitation persists, call a physician immediately. Harmful or fatal if swallowed. Do not take internally. If swallowed, do not induce vomiting. Contact a physician immediately. Contents under pressure. Do not puncture or incinerate container. Do not store at temperatures above 120°F. KEEP OUT OF REACH OF CHILDREN.

08/95

Manufactured for ABATIX ENVIRONMENTAL CORP

Dallaa, TX 75227*214-381-1146 Houston, TX 713-956-2062 Hayward, CA Sante Fe Springs, CA 310-944-3445 Denver, CO

Sante Fe Springs, CA 310-944-3445 Del Phoenix, AZ 602-437-4993 Kei

Denver, CO Kent, WA 510-471-5997 803-373-1000 208-872-6955

NORTH 7600 SERIES FULL FACEPIECE AIR PURIFYING RESPIRATORS

NIOSH/MSHA Certified

The North 7600 Series full facepiece respirators are designed to provide eye, face and respiratory protection while providing optimum comfort. While affording an over 200° field of vision, the hard coated polycarbonate lens protects the wearer's eyes and face against irritating gases, vapors and flying particles. The polycarbonate lens also features optical properties similar to the North 180° Protective Spectacle to minimize distortion and astigmatism.



7600 Series (shown with N7500-8 Filters)



Features	Benefits
Dual flange	Superior fit characteristics. Less inventory and purchasing problems.
Silicone full facepiece	Soft, pliable superior comfort and fit.
Two facepiece sizes, small and medium/large	Comfortable fit for the largest number of respirator wearers.
Chin cup	Positions facepiece properly.
Designed to cover worker's entire face	Worker is provided with eye and face protection from gases, vapors and particles.
Direct cartridge-to-facepiece connection	Secure fit. Creates a cartridge-to- faceplece seal without the use of gaskets.
Cartridges have an inside thread connection	Threads are protected - less likelihood of thread damage.
5 strap head harness and comfortable	Faceplece-to-face seal is effectively maintained.
Orai/nasai cup	Reduces fogging. Lessens "dead-air" space. Standard equipment.
Speaking diaphragm	Easy communication. Standard equipment.
Cast aluminum lens clamps	Secure lens-to-facepiece seal.
Neck strap	Allows wearer to park the respirator when not in use.
Hard coated polycarbonate lens	Excellent optics. Scratch and impact resistant. Meets impact and penetration requirements of ANSI Z87.1-1989.
Wraparound lens	Provides over 200° field of vision. Anti-claustrophobic design.
Lightweight	Adds to comfort, worker acceptance and reduced fatigue. Higher worker productivity.
Certifled NIOSH/MSHA	Compliance with OSHA requirement.

North Safety Equipment



NIOSH/MSHA Certified

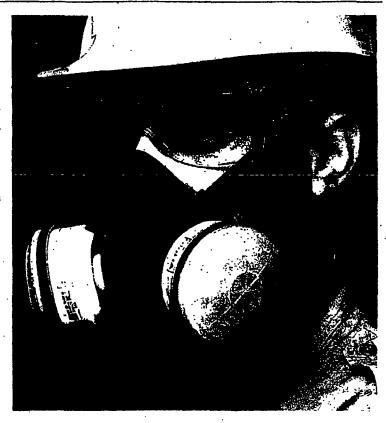
The North 7700 Series is the most comfortable half mask respirator available today. What makes it so comfortable? For one thing, the faceplece is made of soft, hypoallergenic silicone rubber. Because silicone rubber's so much more flexible than organic rubber, it conforms to a worker's face. And three facepiece sizes make it much easier to fit your

The North 7700's cradle suspension system also adds to the comfort of this respirator. The North 7700 doesn't slip like respirators with conventional strap systems. The cradle suspension gives an even seal without creating pressure points.

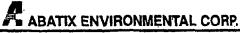
The low profile of the North 7700 gives workers a wide field of vision and room for protective eyewear. Its low inhalation and exhalation resistance makes breathing easier, leaving more energy for production.

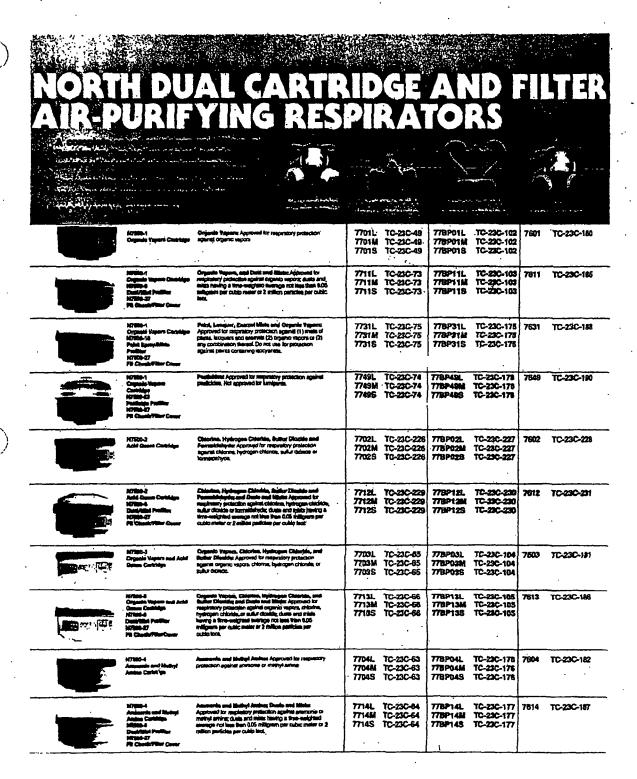


Series 7700 (Shown with N7500-3 Cartridges)



Festures	Benefits
State of the art design and materials	Provides wearers with the best fitting, most comfortable facepiece, thereby improving health and safety.
Silicone facepiece material	Wester comfort. Readily conforms to facial features and doesn't harden with age. Easy to clean. Durable. Stands up to repeated cleanings better than any other facepiece material. Resists distortion, ensuring a better fit, time after time.
Contoured sealing flange	The most comfortable, best fitting half mask facepiece available. Eliminates discomfort caused by pressure points on facial nervea. Design of nose area provides excellent fit and comfort.
Extended side flanges	Provide best possible seal during talking or other facial motions.
Low dead-air space	Improves worker comfort by limiting "re-breathing" of exhaled air.
Three overlapping facepiece sizes	Comfortable fit for largest number of respirator weaters.
Cradle suspension system	Cradle straps provide a comfortable, secure fit without slipping. Convenient side adjustment of headband straps. "One-Piece" suspension prevents loss or misassembly of individual straps. Easily removed for cleaning.
Headband yoke	Allows cartridges to be located lower and further back, improving side vision.
Exhalation valve assembly	Exceptionally low breathing resistance. Positive pres- sure fit check without removing cover.
Direct cartridge-to-facepiece seal	Eliminates the risk of improper seal and reduced pro- tection due to lost or worn sealing gaskets. Minimizes replacement parts inventory. Ease of maintenance, no cartridge receptacles to clean.





KLEENGUARD COVERALLS



BASIC PROTECTION

KleenGuard BP Coveralls offer workers protection against asbestos fibers and other particles at an economical price. This fabric allows air to pass through to evaporate perspiration and cool the skin -- making workers more comfortable and reducing heat stress. Designed for short duration use including asbestos abatement.

Stock No. 010523 X-Large With Hood and Boot Stock No. 010524 XX-Large With Hood and Boot

GENERAT PROTECTION

KleenGuard GP Coveralls offer effective protection against many particles including asbestos fibers -- including water and water based products. KleenGuard breathes like cloth, keeping workers cooler and more comfortable. Ideal for asbestos removal jobs where significant water is used and worker might get wet. Stock No. 010503 XX-Large White with elastic back and wrist Stock No. 010520 Large, White with elastic back and wrist, attached hood and boots.

Stock No. 010521 X-Large, White with clastic back and wrist, attached hood and boots

Stock No. 010533 XX-Large, White with elastic back and wrist, attached hood and boots.

Stock No. 010525 X-Large, Grey with Hip-procket Stock No. 010526 XX-Large, Grey with Hip-procket Stock No. 010518 Hood only with Elastic face Stock No. 010519 Elastic Top Boot Cover

Critical Systems

Houston, Texas

ADMINING CONTICAL BIDUSTINES INC.



MICRO WA

SHOWER WATER FILTRATION SYSTEM

FEATURES:

- FEATURES:

 "Compact Version of the Mini Water System
 "Migh Quality Shower Water Filtation
 "Impervirus to Hust and Corrector
 "Bellessyling a Chaliless Steel Cabinet
 "Lightweight & Mobile
 "Sell Printing by 15-Feet of Suelion Lift
 "Bulleth Electric Level Control Actuation
 "Matuator Engages at 150" and Disengages
 at 1" of Water Level (Adjustable)
 "Pressure Gauges on Fach Stage
 "Treasure Gauges on Fach Stage
 "Treasure Gauges of Fach Stage
 "Treasure Sanges of Saint Stage
 "Treasure Sanges of Saint Stage
 "Treasure Sanges in Saint Stage
 "Treasure Sanges in Micron
 2nd stage; 15 Micron

SPECIFICATIONS :

- *Dimensions : 10 1/2" O's 16 1/2" W's 16" H *Weight: 32 bs. Dry
- Water Connections & Carden Hose Thread Motor & 1/12 Hp Thermally Protected Power & 115 Volts & 60 Hz

- Fow Capacity: 5.55 and 6 est 47 and 6 est



MICRO WATER FILTRATION SYSTEM

Specifications

Dimensions: Base and Case: Weight: Power supply: Gauges:

Level control:

Flow Capacity

Inlet Connection:

16 1/2 in, E x 11 in, W x 16 1/2 in, H
304 Stainless Steel
30 pounds
115 VAC/60 Hz.
Pressure gauges located on both stages
to indicate filter loading.
Built in electrical level control
actuator:
"On" at 2.5 in, WC "Off" at 1 in, WC
5.5 GPM 6 7 Pt. of Head
4.7 GPM 6 18.5 Ft. of Head
Female or male garden hose thread.

PUME

Pump Body Material: Impelier: Lig. Temperature Range: Priming: Bronze, chrome plated Neoprede 140 degrees F to 40 degrees F Self priming to 10 feet of soction lift.

Male garden hose thread.

MOTOR

Amps: Protection: Horsepower: 1.75 amps. Thermally protected (Automatic) 1/12 Ap.

FITTERAUTON

Stage Is

stage II:

Feature:

9.75 in. disposable 20 micron pleated polyester cartridge 5 sq. ft.

1.75 in. disposable 5 misson pleated polyester cartridge 5 pg. ft.

corresion resistant filter housing.

Critical Systems

A Division of Citions Industries, Inc.

MINI WATER FILTRATION SYSTEM

SPECIFICATION:

pimensions: Weight: Power Supply: Gauges:

Level Control: (standard) Flow Capacity: Inlet Connections outlet Connections

PUMP

Model Not Housing Material: Impeller

MOTOR

Model No: H.P.: RPM: Pull Load Ampa: Frame: Service: Thermal Protection:

PILTRATION

Stage Is

Stage II.

30% L 2 30% W 2 25% E 55 lbs. Dry 110 VAC/60 Hz Pressure gauges located on each stage indicate filter loading Electric "ON" 66.75% "OFF" 61.5% of Water 17 gpm 6 8.5 psi FGHT MGHT

1P 862A Aluminum Aluminum

58956B 1/3 3450 6 56J 1.45 Yes (Automatic Reset)

Three 19.5" disposable 20 micron pleated polyester cantridges 25 sq.ft. (total)

Two 9.75" disposable 5 micron pleated polyester cartuidges-10 sq.ft. (total)

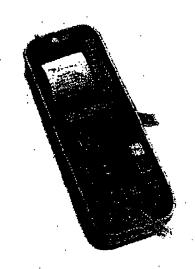
5815 Guil Freeway • Houston, Texas 77023 • Phone: (713) 921-4888 • Fax: (713) 921-7924

OMNIGUARD™ III

Si Home | Accessor | Omniguard | Stingray | tech support | software downloads | what's new | contact ESi

features | details | specifications | accessories & options | distributors | tech support | software downloads

The clear choice for monitoring and documenting Vacuum and Pressure in a containment area. Ideal for Asbestos, Lead and Mold abatement and Clean Room monitoring. The Omniguard III utilizes state of the art pressure measurement technology to accurately monitor negative pressure inside a containment area. With features designed to display information clearly and quickly, you'll be confident that you have the best instrument for the job.



- Large graphic display shows current pressure, monitoring status and alarm settings at a glance
- Instant on screen help
- Programmable high and low alarm setpoints
- Menu driven interface for easy setup and use
- Easy calibration in the field, temperature compensated for unsurpassed accuracy
- Dual inlet ports allow monitoring between two areas
- Memory capacity for over 2000 readings, each pressure reading and alarm occurrence logged with individual time and date stamp
- Multiple reports available at the touch of a key
- 95 decibel audible alarm notifies workers and bystanders when containment is lost
- Relay output supports remote alarm, telephone autodialer or external fan units
- Thermal printer, no ink ribbons
- Paper stores easily in protected compartment
- Rugged self-contained unit includes power cord, owner's manual, 10' of hose and spare paper roll stored in the lid
- Serial port is easily accessible for sending logs to a PC
- Year 2000 compliant

Configurable Features

- High and low alarm setpoints
- Date and time
- Print/log interval adjustable to

- conserve paper and memory
- Relay output can trigger remote alarm, autodialer or other external device
- Variable response rate to avoid nuisance alarms in windy environments
- Passcode protection prevents unauthorized tampering with job settings
- Pressure displayed in units of Inches WC, Millimeters WC or Pascals
- Automatic printout and logging of all changes to settings
- Configuration report prints current settings and monitoring status for easy review
- View log on screen, scroll through entire memory contents



Designed to be the most reliable long term monitoring recorder in field, the Omniguard III offers compact design, ease of use and durability that will last from job to job.

Top of page

Engineering Solutions Inc. • Tukwila, WA • (206) 241-9395 • Fax (206) 241-9411

6 GALLON H.E.P.A. FILTERED VACUUMS

These high performance 6 gal. vacuums are a must for small jobs, glove bagging, tight areas, and laboratories. With all the features of a larger vacuum, (Dry and Wet/Dry capabilities) yet light weight and portable for easy transportation.

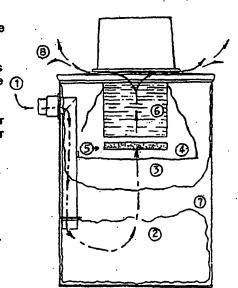
These vacuums feature a H.E.P.A. (High Efficiency Particulate Air) filter that is 99.99% efficient at 0.3 micron (D.O.P. method) - meets or exceeds OSHA and EPA re-

quirements for cleaning the air of lead, asbestos, and other toxic dust. NiKRO H.E.P.A. filtered vacuums have a five stage filtration system; Disposable paper bag, Secondary paper filter, Water Repelling/Non-Clinging Dacron filter bag, Micro-Impact filter, and the H.E.P.A. filter which is positioned in front of the motor, protecting component parts from contamination.

Whatever the application......Turn to NIKRO for a Safer Environment.

OPERATION

- Debris enters the vacuum through the intake and travels down the tube.
- The collection bag is the first of five filters. Here the bulk of the debris is collected, allowing safe, easy disposal.
- The secondary paper filter traps the larger size clust particles which escape from the collection bag, protecting the life of the dacron filter bag.
- The water repelling/non-clinging dacron filter bag sheds water and soot, protecting the H.E.P.A. filter from moisture, larger dust particles, etc.
- The micro-impact filter is composed of specially treated, high efficiency, high density, woven fiberglass and is the most important of the four pre-filters.
- 6) The H.E.P.A. filter is the primary and most critical of the five stage filtration system. Each H.E.P.A. filter is individually tested and certified to be a minimum of 99.99% efficient at 0.3 microns by the D.O.P. Test method.
- A plastic bag is situated inside the tank for clean and easy disposal of the collection bag.
- Clean air is exhausted allowing for a safer environment.



SPECIFICATIONS

Model #	Static Lift	C.F.M.	No. of Filters	Cord Length	Tank Material	Tank Size	Wet Cap.	Weight	Coart Assay.	H.E.P.A. (High Efficiency Particu-
HDP0688	88*	95.	5	-30′	Steel	6 9 01	n/o	29	Yes	late Air) filter meets or exceeds the following Military & Govern- ment specifications.
HD00688	88*	95	5	30′	S/S	6 ga l	n/a	26	Opf.	MII - F - 51079
HW00688	88"	. 95	5	30'	.s/s	6 gal	4 gai	39	Yes	MII - F - 510588 U/L Listed

638 N. Iowa, Villa Park, Illinois 60181 Telephone: 708-530-0558 FAX: 708-530-0740



INDUSTRIES, INC. • 638 N. Iowa Street, Villa Park, Illinois 60181 • (708) 530-0558 • FAX (708) 530-0740

November, 1993

To Whom It May Concern:

This is to advise that all our Nikro H.E.P.A. filtered vacuums are built in accordance with and meet the ANSI Z9.2 Standards.

All of our H.E.P.A. filters are manufactured and D.O.P. Tested in accordance with MIL-STD 282 and UL586, and are registered and labeled on each individual unit by the manufacturer. All the filters we use meet, and in most cases, exceed the minimum standard of 99.97% efficiency for 0.8 micrometer particles.

Sincerely,

Roland G. Nicholson

President

RGN:hc

HEPA Vacuums

Exceed All EPA & OSHA Filtration Standards



Model 102ASB Vacuums

Our popular 2-horsepower 2-stage long-life motor makes this HEPA vacuum a true "work horse" for hem aim service in professional abatement work. The 102ASB offers superior vacuum recovery, ranging from dry, highlipartic ulates, to well heavy debris, 102ASB12P is a heavy duty poly lank vacuum while the 102ASB DA is an adapter to be used on a steel drum.

Features:

- High efficiency "Drop-in" style HEPA filter individually certified to have a minimum efficiency of 99.59 at 3 microns (based on hot D.O.P. tests)
- · Air scal gasket between the motorheid and tanks forms a positive lock fit
- · Polyester prefilter is located on the biottom of the HEPA filter, and is held firmly in place with Velcro fasteness
- A Dacron filter bay covers the entire spacer sleeve and HEPA filter for three-stage filtration. Dacron material sneds dust to maintain maximum vacuum efficiency.
- 25 foot power cord.

model	horse power	water lift	ctm	recovery wel	shipping weight	product code	list price
102ASB12P 102ASB DA	2 2	105° 105	110	12 gadon 55 gallon	<i>1,</i> 1	8166421 8166446	\$ 1.180,00 \$ 1.003,00

102ASB12P price monitors complete loss kit "Drum and moduled

(h) 102 model is U.L. approved



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- Of Company to
- 1. 16. 14. 12. 12. 13.
- a A trace managements of
- 14 ABS (An \$2, 6) 26-15
- manufactors must

HEPA Vac Attachments

	.	45 Dry	•	86 Dry			30 Dry	86/102 Wet/Dry	
description	product	list price	product code		list price	product code	list price	product code	list price
replacement tool kit	8160424	\$ 65.00	816()150		\$ 92.50	Biotes	\$ 261.50	Blicklick	81218
10" r 1.5" hose assembly	R702361	\$ 21 30	REXERTS		\$ 2550	BARREL	\$.25.00	B000311	\$ 35.37
5 hvo-piece metal wand	B702364	\$ 21,00	B521007		\$3046	R321007	\$33.40	8521007	5 34
standard floor brush tool	B702365	\$ 15.50	8527045		\$ 19.90	B607006	\$ 1930	B527095	\$.55.
standard floor squeegee tool	T	+ · = · ·	•			•		8527604	5 1990
standard carpet tool	B702367	\$ 20.00	85270%	٠.	\$ 1950	B)27006	ડ (મ.મ)	8527096	5 90
standard round dusting brush	B702363	S 336	मिश ्रिक्षा		\$ 250	BINALOU	\$ 9.50	8/00/24	\$ 95%
standard crevice tool	1 B702362	\$ 2.20	8701615		5 4163	B/01615	\$ 460	8701675	8 38

HEPA Vac Accessories

	7	45		86		30	-	102
description	product	list price	product code	list price	product	list price	product code	list price
HEPA filter	I B702340	\$ 213,90	Bildroller	\$ 364 344	REPARKAT	\$ 272,40	BioONS	\$3927
space sleeve			8700744	\$ 47%			6/00/500	\$ 47
dacron filter bag	80(1)5:7	\$ 17.2%	Heat	\$ 17.5	•		5633517	\$ 17.0
breque.		•	8527	8 19	.		570001	\$ 25
dispossion band paid	B71014(8)	\$ 17.40	य, ध्युक	\$	#14.18	\$ 7.50	86.14 A	÷ . •
time bact	R52420	\$ 200	17.62.76	\$ ·	1,54,55	8 3	86,72,767	ş ·
FOR COHE BE DIC	-		•			\$ 70.25	•	
abase or direct	-		4.5	: '	•		B-DAME	\$ * · ·
iver picks an adapted each only	•		(8,78 es 1	: .	•		8,847.5	\$ 2



FIBERSET PM

DESCRIPTION

Product No.: 7470 white, 7475 clear, 7480 blue

Fiberset PM is a pre-mixed "lockdown" sealing treatment for microscopic residual fibers present after removal of asbestos containing material (ACM). Fiberset PM is a ready-to-use, class "A" fire rated coating that provides a flexible barrier over residual fibers to insure final air clearance. Fiberset PM and Fiberset FT are the only UL* classified (#R13770) lockdowns accepted for fluted, cellular and corrugated deck assemblies. Fiberset PM is compatible with most leading brands of replacement fireproofing and flooring adhesives. Fiberset PM can also be used to penetrate asbestos contaminated soil in crawl spaces. Fiberset PM is a water based nontoxic coating which employs advanced 100% acrylic resin technology to extend the life expectancy of airless spray equip-

UL Classification: ASTM E-119

UL Category: Encapsulant Materials

PROPERTIES

· Volatile: Water

Average particle size: 0.2 microns

Viscosity @ 77°F: 55-60 Krebs Units

• Weight per gallon @ 77°F: 8.5 lbs.

Film Hardness: Excellent

Film Flexibility: Excellent

· Impact Resistance: Excellent

· Water resistance of dry film: Excellent

• Bond Strength to concrete/steel: Excellent

Coverage: not less than 500 sq. ft./gal.

(as specified by UL)

• Flash point: Tag Closed Cup, Non-combustible water based product.

• Dry Time 1 - 2 hours

 Shelf Life: @ 77°F, 36 months minimum, (in original factory sealed containers).

· Odor: virtually odorless.

· Finish: slight gloss

· Packaged: 5, and 55 gallon containers



APPLICATION INFORMATION

LOCKDOWN: Sealing microscopic residual fibers after asbestos removal is mandatory on every project. Prior to post-removal air monitoring, apply one coat to all exposed surfaces. Fiberset PM has been accepted as part of a UL Classified Fireproofing System for use with Retro-Guard[®] manufactured by W.R. Grace & Co., Conn.

<u>PULLDOWN BY MISTING</u>: Pulldown by misting the contaminated air is an effective technique prior to post removal air-monitoring. To pull down free-floating asbestos fibers effectively, stand in the center of the room and hold the spray gun as close to the ceiling as possible. A mist should be sprayed parallel to the ceiling in every direction or in a circle. Apply one coat to the polyethylene walls and floor.

(Over)



FIBERLOCK TECHNOLOGIES, INC.

150 Dascomb Road Andover, MA 01810 U.S.A. Toll Free: (800) 342-3755 Tel.: (978) 623-9987 Fax: (978) 475-6205 www.fiberlock.com

APPLICATION PROCEDURES FOR FIBERSET PM

PREPARATION

Prior to application, stir thoroughly to achieve a uniform consistency. Fiberset PM is pre-mixed, water addition is not necessary.

APPLICATION EQUIPMENT

Professional models of all brands of spray equipment can be used to successfully apply Fiberset PM. Use the settings below when applying Fiberset PM:

Pressure: 2500-2700 psi Hose length: 100 feet Hose diameter: 1/4 inch

Tip size: .015 - .025 (orifice size)

Fan size: 12 inches

CLEAN UP

Tools and drippings should be cleaned with soap and water before coating dries.

SHIPPING AND STORAGE INFORMATION

Shelf Life: 3 years in sealed containers

Storage Temperature: Keep from freezing. Store in a dry place at temperatures between 40°F - 100°F

Flash Point: None.

Note: Fiberset PM is part of a UL Classified Fireproofing System for use with Classified types RG and RG1 cementitious mintures manufactured by Zonolite Construction Products Division W.R. Grace & Co., Conn.

KEEP OUT OF REACH OF CHILDREN FOR PROFESSIONAL USE ONLY KEEP FROM FREEZING

Cautions: Approved respirators must be used to prevent inhalation of sabestos fibers that may be present in the sir. Protective clothing should be wern. Tools and drappings should be clemed immediately with clean, soapy water before the coating dries. Covedu consideration should be given to all Environmental Protection Agency (EPA), OSHA and state regulations in effect at the time of application of Fiberset PM. The BPA, through the Office of Persicides and Toxic Substances has issued reports headed "Quidance for Controlling Frishle Asbestos-Containing Materials in Buildings," EPA 560/5 85-024, June 1985, and "Managing Asbestos in Place, A Building Owner's Guide to Operations and Maintenance Programs for Asbestos Containing Materials," 207-2003, July 1990, containing the proper data, cautions, shift procedures for asbestos control. Copies are available from the Environmental Assistance Division, TS-799, TSCA Assistances Information Service, U.S. EPA, 401 M Street SW, Washington; DC 20460, (202) 554-1404.

Keep from freezing. Do not store at temperatures above 100°F.

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of this product are beyond our control. Neither Fiberlock Technologies, Inc., nor our agents shall be responsible for the use or results of use of this product or any procedures or apparatus mentioned. We recommend that the prospective user determine the suitability of Fiberset PM for each specific project and for the health and safety of personnel working in the area.



PENEWET .

DESCRIPTION

Product No.: 6450 clear

Penewet is an ready-to-use, colorless wetting agent/surfactant solution incorpororating advanced concepts in surface chemistry. It provides powerful wetting, penetrating and coalescing of asbestos containing materials (ACM) to permit handling and removal of these materials under damp, dust-free conditions. Penewet is a nonflammable water based nontoxic liquid which will not corrode aluminum components of spray equipment.

PROPERTIES

Solids by Weight: 10 +/-2%

· Volatile: Water

Average particle size: 0.2 microns
Viscosity @ 77°F: 50-55 Krebs Units
Which the real college @ 77°F: 8.8 kbs.

• Weight per gallon @ 77°F: 8.8 lbs.

• Ionic nature: Non-ionic

• Flammability: Non-flammable

• Phosphate free?; Yes

Surface tension: 31 dynes/cm.

Coverage: 500 sq.ft./gal.

 Shelf Life: @ 77°F, 36 months minimum, (in original factory sealed containers).

Odor: Applied indoors, virtually odorless.

· Packaged: 5, and 55 gallon containers

APPLICATION INFORMATION

<u>SURFACTANT/WETTING AGENT</u>: Penewet is a ready-to-use formulaiton. Sealing microscopic residual fibers after asbestos removal is mandatory on every project. Prior to post-removal air monitoring, apply one coat to all exposed surfaces prior to post removal air monitoring.

<u>PULLDOWN BY MISTING</u>: Pulldown by misting the contaminated air is an effective technique prior to post removal air-monitoring. To pull down free-floating asbestos fibers effectively, stand in the center of the room and hold the spray gun as close to the ceiling as possible. A mist should be sprayed parallel to the ceiling in every direction or in a circle. Apply one coat to the polyethylene walls and floor.

(Over)



FIBERLOCK TECHNOLOGIES, INC.

150 Dascomb Road Andover, MA 01810 U.S.A. Toll Free: (800) 342-3755 Tei.: (978) 623-9987 Fax: (978) 475-6205 www.fiberlock.com

Appendix G Air Monitoring Plan

IRS ENVIRONMENTAL, INC.

ASARCO Phase 4 Building Cleaning and Demolition

Personal Air Monitoring Plan - Asbestos Removal

LABORATORY SERVICES

Mountain Inspection and Laboratory Services, Inc. 9922 E. Montgomery Ave. # 13
Spokane, WA 99206
(509) 922-1365
(509) 922-1380

Mountain Inspection and Laboratory Services, Inc. has a fully qualified professional staff to conduct air sample analysis for airborne asbestos. This project involves the removal of the following Class I and II materials:

- TSI Pipe insulation fittings
- CAB Cement Asbestos Board
- Vinyl floor tile and sub flooring
- Window caulking
- Millboard
- Gaskets Materials

Air sampling to be performed

• Personnel Air Sampling to complete exposure assessments.

Mountain Inspection and Laboratory Services, Inc will perform laboratory analysis using Phase Contrast Microscopy (PCM) in accordance with NIOSH Method 7400A. Visual Inspections to document work in progress and compliance with the specifications shall be conducted by IRSE Competent Person on a daily or as needed basis. Daily project logs shall include descriptions of the work being performed, personnel onsite, hours worked, percentage of work completed, problems encountered, and information regarding air sampling and analysis.

ABATEMENT PROJECT MONITORING

Personnel monitoring shall be conducted as needed to collect minimum liters per sample requirements. Monitoring will commence with the first asbestos disturbance and continue until an exposure assessment for each removal activity: Removal of pipe covering using glove bag methods, removal of CAB using wet manual methods, flooring removal using wet manual methods, window caulking, roofing material and metalbestos siding.

Sample Location

Sample Quantity

Work Area-Personnel

Two samples per day for each

removal activity.

Work Area-Personnel Excursion

One sample per day for each

activity

Outside Work Area

One sample per day at each Air Filtration Device (AFD)

Exhaust.

- Calibration of pumps Conducted prior to, and after the proper run time for the samples has been achieved. A hand held rotometer, calibrated to a Buck Gilabrator once every six months will be utilized for calibration of high volume pumps.
- Setting of pumps The pumps will be placed in the breathing zone of the most contaminated worker performing each task, to provide the best overall representation of the exposure involved.
- 3. Personnel sampling a minimum of 280 total liters of air will be collected per sample. (60 liters for Personnel excursion) Samples will be collected from the breathing zone of the most contaminated worker through a 25 mm Mixed Cellulose Ester (MCE) filter at flow rates between five (2) and (3) liters per minute.
- 4. Analysis Mountain Inspection and Laboratory Services, Inc. personnel will analyze the air samples off site at Mountain Inspection and Laboratory Services, Inc., a NVLAP Certified Facility. The air samples will be analyzed for fiber content and concentration (fibers per square millimeter of filter area, and fibers per cubic centimeter of air sampled) using NIOSH method 7400, Fibers", August 15, 1987 revision.
- 5. Final Report A comprehensive final report detailing the analytical results of the samples collected will be provided to MCS Environmentalle for review. Sample Results shall be reported to two decimal places or the quantification limit for the type of sample collected. Actual fiber levels may be included in the report, however, two decimal place accuracy shall be used for determining work practice modifications, stop work requirements, and clearance results. Sample results less than .01 shall be reported as <0.01 within the air monitoring reports.

Appendix H Respirator Protection Program

IRS Environmental Respiratory Protection Program

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1.0 Introduction

It is the policy of IRS Environmental to provide and maintain a safe and healthful work place for all employees. To that end, IRS Environmental has developed this program for the selection, use and care of respiratory protection. This respirator protection program has been written to be consistent with all required Federal and State requirements.

2.0 Respirator Policy

Company personnel will use respiratory protection equipment where reasonable engineering controls and chemical substitution cannot minimize respiratory hazards. Engineering controls such as ventilation and substitution of less toxic materials are the first line of defense. However, engineering controls have not always been feasible for some of our operations or have not always completely controlled the identified hazards. In these situations, respirators and other protective equipment must be used.

This program applies to all employees who are required to wear respirators during normal work operations and during certain non-routine operations. Employees participating in the respiratory protection program do so at no cost to them. The expense associated with medical evaluations, training, and respiratory protection equipment will be borne by the Company.

Appropriate respiratory protection shall be used by all employees working in environments that are oxygen deficient (below 19.5 percent by volume); oxygen enriched (greater than 21.5% by volume); or in atmospheres contaminated by dusts, mists, vapors, smoke, or fumes that may exceed the permissible exposure limits (PELs) as defined by WISHA or OSHA or more stringent limits set by a specific Health and Safety Plan.

3.0 References

State of Washington, Department of Labor and Industries, General Occupational Health Standards, WAC 296-62-071, Respiratory Protection.

American National Standards Institute, ANSI Z88.2 1980, Practices for Respiratory Protection.

Occupational Safety and Health Administration, Code of Federal Regulations, CFR 1910.134, New OSHA Respiratory Protection Standard.

4.0 Program Administration

4.1 Safety Coordinator

The Safety Coordinator is **Carl Burnham**. The Safety Coordinator shall be responsible for the development, coordination, and administration of the IRS Environmental Respiratory Protection Program. Specific responsibilities shall include:

- Ensuring that the Company complies with State and Federal requirements.
- 2. Serving as an advisor to all levels of management on matters pertaining to respiratory protection.
- 3. Approving the purchase of all respiratory protection equipment.

- 4. Implementing and reviewing a written respiratory protection program in compliance with WISHA and OSHA requirements.
- 5. Initiating monitoring of work areas to evaluate potential respiratory hazards and maintaining records of monitoring activities.
- 6. Annual inspecting of departments to evaluate program effectiveness.
- 7. Ensuring all personnel wearing a respirator in a negative pressure mode have received a yearly medical evaluation which determines the physiological and psychological limitations of individual wearers.
- 8. Instituting and maintaining appropriate medical and biomedical surveillance programs as recommended by the licensed health care professional.
- 9. Implementing a change schedule for respirator cartridges based on published data, historic data, and frequency of use information.

4.2 On-site Supervisors

On-site Supervisors for each location shall be responsible for on-site compliance with the respiratory protection program requirements. Responsibilities shall include:

- 1. Ensuring that employees are provided proper respiratory protection equipment, as required.
- 2. Enforcing the proper use of such equipment where and when required.
- 3. Ensuring that employees are properly trained in the selection, care and use of respiratory protection equipment.
- 4. Ensuring proper maintenance and storage of respiratory protection equipment.

4.3 Employee Responsibility

Each employee has a definite responsibility in contributing to the success of the respiratory protection program. These responsibilities include:

- Use of respiratory equipment in accordance with training and instructions received.
- 2. Guarding against damage to equipment.
- 3. Observing all safety rules and regulations pertaining to respiratory protection equipment.
- 4. Maintaining personal grooming habits conducive to proper wearing of respiratory protection equipment (no beards or facial hair that interferes with the face to facepiece seal).
- 5. Receiving a medical exam and fit-test prior to initial use of a respirator and annually thereafter.
- 6. Reporting any malfunction of equipment to his/her immediate supervisor.
- 7. Inform their supervisor or the Safety Coordinator of any respiratory hazards that they feel are not adequately addressed in the workplace and of any other concerns that they have regarding the program.
- 8. Notify their On-site Supervisor or the Safety Coordinator of any other problems associated with using their respirator.

5.0 Availability of Respirators

Each employee who wants, or is required to wear; a respirator will be issued one along with replacement parts, cartridges and filters, as needed. The selected types of respirators are available from the Safety Coordinator.

6.0 Selection and Use of Respirators

The following procedures shall be used for the selection and use of respiratory protection:

- 1. Respiratory protection selection will provide protection to a level of exposure below established permissible exposure limits (PEL) for identified hazardous substances and health hazards.
- 2. The Safety Coordinator or his/her designee will conduct a exposure assements upon initial assignment for each operation, process, or work area where airborne contaminants may be present. Selection of respiratory protection for initial assignment will be as specified within Tables 6.1 and 6.2, or as specified within project specifications.
- Company personnel will not enter areas where they will be exposed to hazardous substances or health hazards until the On-site Supervisor has determined the proper level of protection.
- 4. When respiratory protection is used, IRS Environmental personnel will not enter a site without proper positive/negative respiratory fit test as well as a current and valid qualitative/quantitative (whichever appropriate as determined by the Safety Coordinator) fit test. A current and valid qualitative/quantitative fit test means the test was successfully conducted within the past 12 months, the respirator being used is the same style, manufactuer, and size as used during fit testing, and as long as the employee has not incurred facial scarring, dental changes, cosmetic surgery, or obvious change in body weight.
- 5. Contact lenses may be worn with a respirator in contaminated atmospheres.
- 6. Proper selection of respirators shall be made according to the guidance of American National Standard Practices for Respiratory Protection Z88.2-1969 (A later edition of this standard, Z88.2-1980, has been issued).
- 7. The Safety Coordinator will ensure that respirators selected will not impair the worker's vision, hearing, communication, and physical movement necessary to perform jobs safely.
- 8. Until the On-site Supervisor has determined the proper level of protection, Company personnel are not to enter areas where the known

concentrations of any material create immediately dangerous to life and health (IDLH) conditions, the Oxygen concentration is below 19.5% or above 21.5%, a lower explosive limit of 10% is reached or exceeded, or there is any indication that the atmosphere may be contaminated by dusts, mists, vapors, smoke, or fumes that may exceed the permissible exposure limits (PELs).

- 9. Entry into confined spaces will not be allowed unless contaminant levels are known and the space is considered safe for entry. If the space is deemed a permit-required confined space, an entry permits must be issued before personnel are allowed to enter a confined space as per the IRS Environmental Confined Space Entry Program.
- 10. Company personnel working in areas where the workers, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere will always work at least in pairs. Communication (visual, voice, or signal line) shall be maintained between both or all individuals present. It shall be planned that one individual will be unaffected by any likely incident and have the proper rescue equipment to be able to assist the other(s) in case of emergency.
- 11. The assigned respirator outlined in Tables 6.1 and 6.2 or protection factors in "WAC 296-62-07131, Table 1--Assigned Protection Factors" will be used when selecting respirators. Half-mask respirators can provide adequate protection for routine respirator use, where employee exposures do not exceed ten times the permissible exposure limit.
- 6.1 Respirator Selection Based Upon Exposure

Table 6.1 lists types of respirators available to employees. Each respirator listed has specified use limits for the hazardous contaminants encountered by IRS Environmental: asbestos and lead. For other contaminants other than asbestos and lead, the Safety Coordinator will select appropriate respiratory protection.

Brand/Type Respirator		
	Use Limits Asbesto	Use Limits Lead
	s	
North 7700, 1/2 Face Negative Pressure	1 f/cc	500 μg/m ³
North 76008A, Full Face Negative Pressure	5 f/cc	2,500 μg/m ³
Racal Powerflow, Full Face Powered Air Purifying	10 f/cc	5,000 μg/m ³
Neoterik SR-14, Full Face Powered Air Purifying	10 f/cc	5,000 μg/m ³
Neoterik 50366CF, Full Face Supplied Air, Constant Flow with HEPA Egress	100 f/cc	10,000 μg/m ³
North 85785, Full Face Supplied Air, Constant Flow with HEPA Egress	100 f/cc	10,000 μg/m ³

1.S.I Safee, Full Face, Supplied Air, Pressure Demand w/HEPA Egress	100+ f/cc	10,000 μg/m³
North 85785, Full Face, Supplied Air, Pressure Demand w/HEPA Egress	100+ f/cc	10,000 μg/m ³

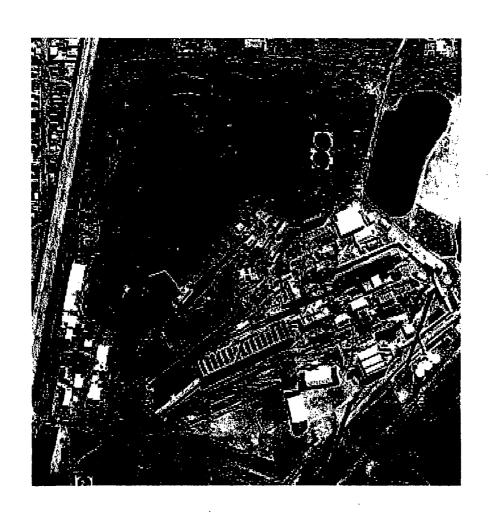
6.2 Respirator Selection – Activity Specific Respirators are required for all employees engaged in the tasks listed in Table 6.2(A) and 6.2(B). The expected concentration range of asbestos (Table 6.2(A)) and lead (Table 6.2(B)) for each activity is shaded. Exposure ranges for some activities are wide due to hazardous constituent content of the material, work practices used, and engineering controls instituted. IRS Environmental will supply respirators for the highest concentration listed for each activity. IRS Environmental has established the following exposure data and/or consulted regulatory guidance to develop the listed activities' expected airborne concentrations. As these activities continue to be assessed and new activities are initially assessed, the Safety Coordinator will amend this section as needed.

Table 6.2(A): Respira	tor Sele	ction Ta	ble - ASB	ESTOS
Removal Activity	0-1 f/cc	1-5 f/cc	5-10 f/cc	10-100 f/cc
Blanket Insulation				
Boiler Insulation	<u> </u>			THE RESERVE AND A STREET
Boiler Breaching ¹			5-10 f/cc	
Cement Asbestos Board				
Ceiling Tile				
Caulking	到時間			
Duct Tape				
Duct Covering			MEM CONTROL	
Floor Tile - Manual				
Mastic - Manual				
Mastic – "Blastrak"				
Flex Gaskets on Ducts				
Hard Pipe Fittings, Glovebag				
Hard Pipe Fittings, No Glovebag				
Linoleum Felt Backing				
Pipe Insulation "Aircell" - Glovebag				
Pipe Insulation "Aircell" - No Glovebag				
Pipe Insulation - Contained Block				
Roofing – Asphalt Impregnated		:		
Roofing - Felt				
Spray Texture – "Popcorn"				
Structural Fireproofing - Hard				
Structural Fireproofing – Loose				
Rope Material				
Tank Insulation - Block				
Tank Insulation - "Aircell"				
Wall Board	建筑模型			
Window Glazing	经 的经验			

Minimum respiratory requirement in Washington State is at least full face, supplied air, constant flow.

Table 6.2(B): Respirator Selection Table – LEAD						
Removal Activity	0 - 500 μg/m ³	501-2,500 μg/m ³	2,501+ μg/m ³			
Open Abrasive Blast Cleaning with Expendable Abrasives						
Open Abrasive Blast Cleaning with Recyclable Abrasives						
Torch Cutting						
Torch Burning						
Welding			AND THE STATE OF			
Using Lead Containing Mortar						
Lead Burning						
Rivet Busting						
Mechanical Cleaning (with Power Tools)						
Cleanup of Abrasive Blast Cleaning with Expendable Abrasives						
Abrasive Blast Enclosure Movement						

Appendix I Site Layout



Appendix J Laboratory Certifications

United States Department of Commerce National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:1999

NVLAP LAB CODE: 101890-0

Mountain Laboratories

Spokane, WA

is recognized by the National Voluntary Laboratory Accreditation Program for conformance with criteria set forth in NIST Handbook 150:2001 and all requirements of ISO/IEC 17025:1999.

Accreditation is granted for specific services, listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

2006-10-01 through 2007-09-30

Effective dates



For the National Institute of Standards and Technology



11/15/2006

Karen Drader Mountain Laboratories 9922 E. Montgomery Suite 13 Spokane, WA 99206

Lab ID# 101129

Dear Karen,

Please find your laboratory's Industrial Hyglene Proficiency Analytical Testing (IHPAT) results for Round 167. The deadline for ordering a retest is December 1, 2006. IHPAT Round 168 sample kits will be mailed to laboratories around January 1, 2007. Your laboratory's data will be due by 11:59pm EST on February 1, 2007. The analytes for round 168 are:

- Metals cadmium, chromium, lead
- Asbestos amosite
- Silica coal dust/talc
- Organics methyl ethyl ketone(MEK), methyl isobutyl ketone(MiK)
- Diffusive benzene, toluene, o-xylene

Please handle, store and analyze your laboratory's PAT samples in the same manner as routine client samples. To submit your laboratory's data, please visit the Proficiency Analytical Testing (PAT) page and click on the PAT Data Entry Portal: http://www.alha.org/Content/LQAP/PT/pt.htm

Your laboratory's password needed to access the PAT Data Entry Portal is provided in the upper right hand corner (next to your lab ID#) of the address label on the results submission form included with your PAT samples.

Print and save the confirmation page after submitting data via the AIHA PAT Data Entry Portal.

The AIHA Laboratory Quality Assurance Programs Policies and Application for AIHA accreditation are available on-line.

http://www.aiha.org/Content/LQAP/documents/documents.htm

Note: The Policies for 2006 comply with ISO/IEC 17025: 1999.

I encourage you to contact me with any feedback, questions or if you wish to contest your results at (703) 846-0797.

Sincerely,

Natasha Sekitoleko PAT Data Specialist

Page 2 of 2 11/15/2006 Lab ID: 101129

Industrial Hygiene Proficiency Analytical Testing Results

This document contains three sub-reports relating to IHPAT Round 167. The first report contains your laboratory's results listed per contaminant, per sample. The second report contains your current and 2 previous test round performance respectively (where applicable), and the final report contains summary results for all laboratories for IHPAT round 167.

Testing Results for IHPAT Round 167

This part of the report contains your laboratory's results listed per contaminant, per sample.

Contaminal A	Units		Result T	Rek Value	Lower Limit	Upper Limit	z-Score	Rating
	f/mm2	1	216	262	128	442	-0.9	A
Ashania (Than (ACD)	f/mm2	2	81	101	49	170	-1.0	Α
Asbestos / Fibers (ASB)	f/mm2	3	144	188	92	319	-1.3	Α
	f/mm2	4	101	98	48	166	0.1	Α

Please note

Reference value is the mean of the reference laboratories
Lower limit = reference value - 3 standard deviations
Upper limit = reference value +3 standard deviations
A: Acceptable Analysis; U: Unacceptable Analysis
Z-score = (reported result - reference value)/standard deviation

Note: The acceptability of reported results is based on upper and lower performance limits. This is why a reported result may appear unacceptable according to z-score, but be identified as acceptable.

Page 3 of 3 11/15/2006 Lab ID: 101129

Overall Performance Summary Concluding with 167

The following table contains your laboratory's current and 2 previous test rounds performance respectively (where applicable). For more information in regard to the determination of proficiency, please see Policy Module 6B, Section 6B.2 for IHPAT and Policy Module 6C Section 6C.2 for ELPAT Lead-in-Air located at: http://www.aiha.org/Content/LQAP/documents/accredpolicymods.htm

Sample	Round	Round Performance	Round Score	Proficiency Status -Three L. Round Score
	165	4/4	Pass	
Asbestos	166	4/4	Pass	
	167	4/4	Pass	Р

Please note

The denominators represent the total number of samples analyzed.

The numerators represent the number of acceptable results.

Pass: Round Score ≥ 75% Fail: Round Score < 75%

P - Proficient, NP - Non-proficient.

A laboratory is rated proficient (P) for the associated FoT/Method(s), if the laboratory has a passing score for the applicable PT analyte class in two (2) of the last three (3) consecutive PT rounds. A laboratory is rated non-proficient (NP) for the applicable FoT/Method if the laboratory has falling scores for the associated PT analyte class in two (2) of the last three (3) consecutive PT rounds. If a laboratory receives samples and does not report the data, the results will be treated as outliers.

Page 4 of 4 11/15/2006 Lab ID: 101129

Performance of all Labs for IHPAT Round 167

The following table contains aggregate results for all laboratories participating in IHPAT round 167.

Contaminant	#	Ref. Value	Std Dev	RSD (%)	Total Labs	, Total Acceptable	Low Outlier	High Quiller
	1	0.00780	0.00040	5.1	196	186	6	4
Cadadium (CAD)	2	0.00420	0.00020	4.9	196	183	5	8
Cadmium (CAD)	3	0.01590	0.00081	6.1	196	191	4	1
•	4	0.01170	0.00066	5.6	196	. 188	6	2
	1	0.0902	0.0046	5:1	197	193	3	1
land (LEA)	2	0.0607	0.0028	4.6	197	194	3	0
Lead (LEA)	3	0.1191	0.0057	4.7	197	195	2	0
	4	0.0312	0.0015	4.9	197	. 192	2	3
	1	0.0807	0.0044	5.4	195	187	5	3
7:n= (7!N)	2	0.1196	0.0053	4.4	195	182	9	4
Zinc (ZIN)	3	0.1585	0.0083	5.2	195	185	8	2
	4	0.0412	0.0026	6.2	195	183	6	6
	1	0.1076	0.0215	20.0	58	56	2	0
	2	0.1588	0.0251	15.8	58	57	1	0
Silica (SIL)	3	0.0616	0.0123	20.0	58	57	0	1
	4	0.0838	0.0168	20.0	58	56	2	0
	1	262	52	20.0	759	659	82	18
A-t	2	101	20	20.0	759	644	47	68
Asbestos / Fibers (ASB)	3	188	38	20.0	759	674	53	32
	4	98	20	20.0	759	703	29	27
	1	0.7841	0.0749	9.6	157	148	5	4
Mothopal (MOH)	2	0.1154	0.0128	11.1	157	144	5	8
Methanol (MOH)	3	0.2483	0.0262	10.5	157	149	2	6
	4	0.3467	0.0328	9.5	157	147	5	5
		•						

Appendix K Material Safety Data Sheet (MSDS)

AMREP INC

-- HEAVY DUTY ADHESIVE

MSDS Safety Information

FSC: 8040

MSDS Date: 09/14/1992

MSDS Num: BXJBH LIIN: 00N058978

Product ID: HEAVY DUTY ADHESIVE

MFN: 01

Responsible Party

Cage: 3V338 Name: AMREP INC

Address: 990 INDUSTRIAL PK DR

City: MARIETTA GA 30062

Info Phone Number: 404-422-2071 Emergency Phone Number: 800-255-3924

Preparer's Name: ES/KD

Published: Y

Contractor Summary

Cage: 3V338
Name: AMREP INC

Address: 990 INDUSTRIAL PK DR City: MARIETTA GA 30062-2433

Phone: 404-422-2071

Ingredients

Cas: 67-64-1

RTECS #: AL3150000

Name: ACETONE (SARA 313) (CERCLA)

% Wt: 30-40

OSHA PEL: 1000 PPM

ACGIH TLV: 750PPM/1000STEL EPA Rpt Qty: 5000 LBS

DOT Rpt Qty: 5000 LBS

Cas: 110-54-3

RTECS #: MN9275000 Name: HEXANE (CERCLA)

% Wt: 10-15

OSHA PEL: 500 PPM ACGIH TLV: 50 PPM EPA Rpt Qty: 1 LB DOT Rpt Qty: 1 LB

Cas: 75-28-5

RTECS #: TZ4300000

Name: PROPANE, 2-METHYL-; (ISOBUTANE)

% Wt: 40-45

OSHA PEL: 1000 PPM (MFR) ACGIH TLV: 1000 PPM (MFR)

Health Hazards Data

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.

Route Of Entry Inds - Inhalation: YES

Skin: YES Ingestion: NO

Carcinogenicity Inds - NTP: NO

IARC: NO

Effects of Exposure: ACUTE: INHAL: EXCESSIVE INHAL OF VAPS CAN CAUSE

& RESP IRRIT, DIZZ, WEAK, NAUS, HDHC, POSS UNCON/ASPHYXIATION. EYES: IRRIT. SKIN: IRRIT DUE TO DEFAT OF SKIN. INGEST: POSS CHEM PNEUMIT IF ASPIRED

INTO LUNGS. CHRONIC: EXCESSIVE INHAL OF HEXANE MAY CAUSE NERVE DMG. Explanation Of Carcinogenicity: NOT RELEVANT.

Signs And Symptions Of Overexposure: SEE HEALTH HAZARDS.

Medical Cond Aggravated By Exposure: MAY AGGRAVATE EXISTING EYE, SKIN, OR UPPER

RESPIRATORY CONDITIONS.

First Aid: EYES: FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF IRRITATED, SEE

MD. SKIN: WASH WITH SOAP AND WATER. IF IRRITATED, SEE MD. INHAL: REMOVE TO

FRESH AIR. RESUSCITATE IF NECESSARY. GET MEDICAL AID. INGES T: DO NOT INDUCE

VOMITING. CALL MD IMMEDIATELY.

Handling and Disposal

Spill Release Procedures: ABSORB WITH SUITABLE MEDIUM.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.
Waste Disposal Methods: INCINERATE OR LANDFILL ACCORDI

Waste Disposal Methods: INCINERATE OR LANDFILL ACCORDING TO LOCAL, STATE, AND

FEDERAL REGULATIONS. DO NOT FLUSH INTO SEWERS. AEROSOL CANS WHEN VENTED TO

ATMOSPHERIC PRESSURE THROUGH NORMAL USE, POSE NO DISPOSAL HAZARD. Handling And Storage Precautions: DO NOT PUNCTURE OR INCINERATE CONTAINERS. DO

NOT STORE AT TEMPERATURES ABOVE 130F.

Other Precautions: AVOID FOOD CONTAMINATION. KEEP OUT OF REACH OF CHILDREN.

REMOVE IGNITION SOURCES. AVOID BREATHING VAPORS.

Fire and Explosion Hazard Information

Flash Point Text: FLAMMABLE

Extinguishing Media: FOAM, DRY CHEMICAL, CARBON DIOXIDE, WATER. Fire Fighting Procedures: WEAR NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP (FP

N). USE WATER FOG TO COOL CONTRS TO PREVENT RUPTURING & EXPLODING CONTRS.

PROVIDE SHIELDING FOR PERSONNEL.

Unusual Fire/Explosion Hazard: EXTREMELY FLAMMABLE. DO NOT EXPOSE AEROSOLS TO

TEMPERATURES ABOVE 130F OR THE CONTAINER MAY RUPTURE.

Control Measures

Respiratory Protection: IF VAPOR CONCENTRATION EXCEEDS TLV, USE NIOSH/MSHA
APPROVED RESPIRATOR IN POSITIVE PRESSURE MODE.
Ventilation: ADEQUATE VENTILATION TO KEEP VAPOR CONCENTRATION BELOW

TLV.

Protective Gloves: NEOPRENE GLOVES.

Eye Protection: ANSI APPRVD CHEM WORKERS GOGGS (FP N).

Other Protective Equipment: NONE.

Work Hygienic Practices: WASH WITH SOAP AND WATER BEFORE HANDLING FOOD.

REMOVE

CONTAMINATED CLOTHING.

Supplemental Safety and Health: NONE SPECIFIED BY MANUFACTURER.

Physical/Chemical Properties

Vapor Pres: 80 PSIG

Spec Gravity: 0.853 (H*2O=1)
Solubility in Water: PARTIAL

Appearance and Odor: STRAW COLORED LIQUID, WITH KETONE SOLVENT ODOR

Reactivity Data

Stability Indicator: YES

Stability Condition To Avoid: OPEN FLAME, WELDING ARCS, HEAT, SPARKS.

Materials To Avoid: STRONG OXIDIZING AGENTS.

Hazardous Decomposition Products: CARBON DIOXIDE, CARBON MONOXIDE.

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: NOT RELEVANT.

\$40,5000cc.\$25000cc.\$2500cc.\$2500cc.\$2500cc.\$250cc.\$250cc.\$2

Toxicological Information

Ecological Information

MSDS Transport Information

Regulatory Information

Other Information

HAZCOM Label

Product ID: HEAVY DUTY ADHESIVE

Cage: 3V338

Company Name: AMREP INC Street: 990 INDUSTRIAL PK DR

City: MARIETTA GA Zipcode: 30062-2433

Health Emergency Phone: 800-255-3924

Label Required IND: Y

Date Of Label Review: 04/20/1995

Status Code: C

Label Date: 04/20/1995

Origination Code: G Chronic Hazard IND: Y Eye Protection IND: YES Skin Protection IND: YES Signal Word: DANGER

Respiratory Protection IND: YES

Health Hazard: Moderate Contact Hazard: Slight Fire Hazard: Severe Reactivity Hazard: None

Hazard And Precautions: EXTREMELY FLAMMABLE. ACUTE: INHAL: EXCESSIVE

INHALATION

OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, DIZZINESS, WEAKNESS,

NAUSEA, HEADACHE, POSSIBLE UNCONSCIOUSNESS OR ASPHYXIATION. EYES: IRR ITATION. SKIN: IRRITATION DUE TO DEFATTING OF SKIN. INGEST: POSSIBLE CHEMICAL

PNEUMONITIS IF ASPIRED INTO LUNGS. CHRONIC: EXCESSIVE INHALATION OF HEXANE

MAY CAUSE NERVE DAMAGE.

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Material Safety Data Sheet

Section 1 Product and Company Identification

Product Name: Duct Tape

Revision #: 2.3 Date Prepared: June 3, 1993 Date Revised: September 16,

1998

Manufacturer:

Supplier/Importer:

LA-CO INDUSTRIES, Inc./Markal Co.

1201 Pratt Blvd.

Elk Grove Village, IL, USA

60007-5746

Information Telephone: 847-956-7600 Emergency Telephone: Call CHEMTREC

USA 800-424-9300

International (Call Collect) 1-703-527-3887

Chemical Formula: Mixture

Section 2

Labeling

HMIS: 010 NFPA: 110

WHMIS (CANADA): NONE EPA HAZARDS: NONE

Section 3

Hazardous Ingredients

NO INGREDIENTS CONSIDERED HAZARDOUS UNDER OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200.

AN INERT TAPE COMPOSED OF COTTON CLOTH AND POLYETHYLENE SHEETING WITH A CALENDERED RUBBER ADHESIVE SYSTEM. NO FUMES WILL RESULT FROM THE PROPER USE OF THIS TAPE.

Section 4 Physical/Chemical Characteristics

BOILING POINT: N.A.

SPECIFIC GRAVITY (H,0=1): N.A.

VAPOR PRESSURE (mmHg): N.A.

VAPOR DENSITY (AIR=1): N.A.

MELTING POINT: N.A.

SOLUBILITY IN WATER: N.A.

EVAP. RATE (butyl acetate=1): N.A.

APPEARANCE: SILVER TAPE

Product Name: Duct Tape

Revision #: 2.3 Date Prepared; June 3, 1993 Date Revised; September 16, 1998

Section 5

Fire and Explosion Hazard Data

FLASH POINT (method used): N.A.

FLAMMABLE LIMITS:

LEL: N .A.

UEL: N.A.

EXTINGUISHING MEDIA: N.A.

SPECIAL FIRE FIGHTING PROCEDURES: N.A. UNUSUAL FIRE AND EXPLOSION HAZARDS: N.A.

Section 6

Reactivity Data

STABILITY: STABLE

CONDITIONS TO AVOID: N.A.

INCOMPATABILITY (MATERIALS TO AVOID): N.A.

HAZARDOUS DECOMPOSITION PRODUCTS: OXIDES OF CARBON IF BURNED.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: N.A.

Section 7

Health Hazard Data

ROUTES OF ENTRY:

INHALATION? NO

SKIN? NO

INGESTION? NO

HEALTH HAZARDS: NONE

CARCINOGENICITY:

NTP? NO

IARC? NO

OSHA? NO

SIGNS AND SYMPTOMS OF EXPOSURE: N.A.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N.A.

EMERGENCY AND FIRST AID PROCEDURES; N.A.

Precautions For Safe Handling and Use Section 8

RELEASE AND SPILL PROCEDURES: SOLID FINISHED PRODUCT DOES NOT LEAK OR SPILL WASTE DISPOSAL METHOD: N.A.

HANDLING AND STORAGE PRECAUTIONS: N.A.

OTHER PRECAUTIONS: N.A.

Section 9

Control Measures

RESPIRATORY PROTECTION: N.A.

Product Name:

Revision #: 2.3

Duct Tape

Date Prepared: June 3, 1993 Date Revised: September 16, 1998

VENTILATION:

LOCAL EXHAUST: N.A.

SPECIAL: N.A.

MECHANICAL (GENERAL): N.A.

OTHER: N.A.

PROTECTIVE GLOVES: N.A.

EYE PROTECTION: N.A.

OTHER PROTECTIVE EQUIPMENT: N.A.

WORK/HYGIENIC PRACTICES: N.A.

Section 10

Other Information

MSDS Prepared By: Director of Chemical Safety

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POLY-AMERICA INC -- POLYETHYLENE SHEETING/BAGS/LAWN

EDGING

MSDS Safety Information

FSC: 6850

MSDS Date: 05/01/1995

MSDS Num: B2DHP LIIN: 00F047749

Product ID: POLYETHYLENE SHEETING/BAGS/LAWN EDGING

MFN: 01

Responsible Party

Cage: 66830

Name: POLY-AMERICA INC Address: 2000 W MARSHALL DR

City: GRAND PRAIRIE TX 75051-2795 Info Phone Number: 214-647-4374 Emergency Phone Number: 214-647-4374

Review Ind: Y Published: Y

Preparer Co. when other than Responsible Party Co.

Cage: 66830

Name: POLY-AMERICA INC Address: 2000 W MARSHALL DR

City: GRAND PRAIRIE TX 75051-2795

Contractor Summary

Cage: 66830

Name: POLY-AMERICA INC Address: 2000 W MARSHALL DR

City: GRAND PRAIRIE TX 75051-2795

Phone: 214-647-4374

Ingredients

Name: POLYETHYLENE COPOLYMER

Name: POLYETHYLENE HOMOPOLYMER

Health Hazards Data

Route Of Entry Inds - Inhalation: NO

Skin: NO

Ingestion: YES

Carcinogenicity Inds - NTP: NO

IARC: NO OSHA: NO

Effects of Exposure: EYES: SOLID/DUST MAY CAUSE IRRITATION/CORNEAL

INJURY.

SKIN: NEGLIGIBLE HAZARD. INHALATION: NEGLIGIBLE HAZARD AT AMBIENT

TEMPERATURE. INGESTION: MINIMAL TOXICITY.

Explanation Of Carcinogenicity: NONE

Signs And Symptions Of Overexposure: EYES: SOLID/DUST MAY CAUSE

IRRITATION/CORNEAL INJURY. SKIN: NEGLIGIBLE HAZARD. INHALATION: NEGLIGIBLE HAZARD AT AMBIENT TEMP. INGESTION: MINIMAL TOXICITY. First Aid: SKIN: MOLTEN PLASTIC SHOULD BE TREATED W/COLD WATER BEFORE PLASTIC IS REMOVED, THEN WRAP IN CLEAN GAUZE. OBTAIN MEDICAL ATTENTION IN ALL CASES. Handling and Disposal Spill Release Procedures: NON-HAZARDOUS, DEGRADE VERY SLOWLY & MAY NUISANCE. RECYCLE OLD/UNUSED PLASTIC WHEN POSSIBLE. Waste Disposal Methods: DISPOSE OF IAW/FEDERAL, STATE & LOCAL REGULATIONS. Fire and Explosion Hazard Information Flash Point Text: 600-650F Extinguishing Media: WATER Fire Fighting Procedures: USE WATER TO COOL SURFACES. OTHER TYPES OF EXTINGUISHERS MAY BE USED. USE NIOSH APPROVED SCBA IN ENCLOSED AREAS. STATIC DISCHARGE CAN BE GENERATED. (SEE SUPP) Control Measures Respiratory Protection: NONE Ventilation: NONE Protective Gloves: NONE Eye Protection: NONE Other Protective Equipment: NONE Physical/Chemical Properties Solubility in Water: INSOLUBLE Appearance and Odor: THIN SOLID FILM/SHEET W/NO ODOR. Reactivity Data #**###################** Stability Indicator: YES Stability Condition To Avoid: TEMP >572F. Materials To Avoid: NONE Hazardous Decomposition Products: CO2, HYDROGEN DIOXIDE & UNDER LEAN OXYGEN CONDITIONS, CO. Hazardous Polymerization Indicator: NO Toxicological Information Ecological Information MSDS Transport Information

Regulatory Information

Other Information

HAZCOM Label

Product ID: POLYETHYLENE SHEETING/BAGS/LAWN EDGING

Cage: 66830

Company Name: POLY-AMERICA INC Street: 2000 W MARSHALL DR City: GRAND PRAIRIE TX

Zipcode: 75051-2795

Health Emergency Phone: 214-647-4374

Label Required IND: Y

Date Of Label Review: 12/16/1998

Status Code: C

Label Date: 12/16/1998 Origination Code: G

Hazard And Precautions: EYES: SOLID/DUST MAY CAUSE IRRITATION/CORNEAL

INJURY.

SKIN: NEGLIGIBLE HAZARD. INHALATION: NEGLIGIBLE HAZARD AT AMBIENT

TEMPERATURE. INGESTION: MINIMAL TOXICITY.

EYES: SOLID/DUST MAY CAUSE

IRRITATION/CORNEAL INJURY. SKIN: NEGLIGIBLE HAZARD. INHALATION: NEGLIGIBLE

HAZARD AT AMBIENT TEMP. INGESTION: MINIMAL TOXICITY.

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FIBERLOCK TECHNOLOGIES INC -- FIBERSET FT & FIBERSET PM, 7470

MSDS Safety Information

FSC: 8010

MSDS Date: 03/29/1994

MSDS Num: CFRTX LIIN: 00N049779

Product ID: FIBERSET FT & FIBERSET PM, 7470

MFN: 02

Responsible Party

Cage: 0JYL9

Name: FIBERLOCK TECHNOLOGIES INC

Address: 630 PUTNAM AVE

City: CAMBRIDGE MA 02139-0802 Info Phone Number: 617-876-8020

Emergency Phone Number: 617-876-8020;800-255-3924

Published: Y

Contractor Summary

Cage: 0JYL9

Name: FIBERLOCK TECHNOLOGIES INC

Address: 630 PUTNAM AVE

Box: 390432

City: CAMBRIDGE MA 02139-0802

Phone: 617-876-8020

Ingredients

Name: NON-HAZARDOUS INGREDIENTS

OSHA PEL: N/K (FP N) ACGIH TLV: N/K (FP N)

Health Hazards Data

LD50 LC50 Mixture: LD50:(ORAL,RAT) >5.0 G/KG

Route Of Entry Inds - Inhalation: NO

Skin: NO

Ingestion: NO

Carcinogenicity Inds - NTP: NO

IARC: NO OSHA: NO

Effects of Exposure: ACUTE: INHALATION: VAPORS OR SPRAY MISTS MAY BE

SLIGHTLY

IRRITATING TO EYES, NOSE, THROAT, AND MUCOUS MEMBRANE OF RESPIRATORY TRACT,

PRODUCING SYMPTOMS OF HEADACHE AND NAUSEA IN POORLY VENTILATED AREAS. SKIN

CONT: PROLONGED OR REPEATED CONT W/COATING MAY CAUSE SLIGHT SKIN IRRITATION.

EYE CONT: DIRECT (EFTS OF OVEREXP)

Explanation Of Carcinogenicity: NOT RELEVANT.

Signs And Symptions Of Overexposure: HLTH HAZ: CONTACT; INCONSEQUENTIAL

IRRITATION. INGESTION: MAY CAUSE NAUSEA AND INTENDED EXPECTORATION. Medical Cond Aggravated By Exposure: NONE SPECIFIED BY MANUFACTURER.

First Aid: INHAL: REMOVE TO FRESH AIR. EYE CONT: IMMED FLUSH W/PLENTY OF WATER

FOR @ LST 15 MINS & CONSULT PHYS. SKIN CONT: WASH SKIN THOROUGHLY W/SOAP

& WATER. IF DRENCHED, REMOVE & WASH CLTHG BEFORE REUSE. ING EST: IF SWALLOWED, CALL PHYS IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO UNCONSCIOUS

PERSON. TREAT SYMPTOMATICALLY.

Handling and Disposal

Spill Release Procedures: KEEP UNNEC PEOPLE AWAY. FLOOR MAY BE SLIPPERY; USE

CARE TO AVOID FALLING. DIKE & CONTAIN MATL W/INERT MATL(E.G. SAND, EARTH). TRANSFER LIQUID TO CNTNRS FOR RECOVERY/DISP & SOLID DIKING MATL

TO SEPARAT E CNTNRS FOR DISP. KEEP SPILLS & CLEANING (SUPDAT) Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Methods: COATING & ANY CONTAMD DIKING MATL SHOULD BE THORO

AIR DRIED & COLLECTED INTO DRUMS. DRUMS SHOULD THEN BE SEALED & PROPERLY LBLD W/WASTE DESIGNATION & LANDFILL/INCINERATED ACCORDING TO CURRENT LOCAL, S TATE AND FEDERAL REGULATIONS.

Handling And Storage Precautions: MAX STORAGE TEMP 100F. KEEP CLOSURE TIGHT

& CONTAINER UPRIGHT TO PREVENT LEAKAGE. PRECAUTIONARY LABELING: "KEEP FROM FREEZING".

Other Precautions: DO NOT GET IN EYES. AVOID SKIN CONT. PVNT PRLNGD/RPTD BRTHG

OF VAPS/SPRAY MISTS. DO NOT HNDL UNTIL MFR'S SAFETY PRECAUTIONS & LABEL

INSTRUCTIONS HAVE BEEN READ & UNDERSTOOD. AVOID BREATHING SANDING DU

Fire and Explosion Hazard Information

Flash Point Text: NON-COMBUSTIBLE

Extinguishing Media: MEDIA SUITABLE FOR SURROUNDING FIRE (FP N). Fire Fighting Procedures: USE NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).

Unusual Fire/Explosion Hazard: NONE SPECIFIED BY MANUFACTURER.

Control Measures

Respiratory Protection: NONE REQD IF GOOD VENT IS MAINTAINED. WEAR RESP (NIOSH-APPRVD/EQUIV) SUITABLE FOR CONCS & TYPES OF AIR CONTAMINANTS ENCOUNTERED. USE NIOSH APPRVD CHEMICAL/MECHANICAL FILTERS DESIGNED TO REMOVE

PARTICU LATES IN OPEN & RESTRICTED VENT (SUPDAT)

Ventilation: SUFFICIENT VENT, IN PATTERN & VOL, SHOULD BE PROVIDED TO KEEP

AIR CONTAMINANT CONC BELOW APPLIC EXPOSURE LIMITS.(SUPDAT)
Protective Gloves: IMPERVIOUS/NEOPRENE/RUBBER GLOVES.
Eye Protection: ANSI APPRVD CHEM WORKERS GOGGLES (FP N).
Other Protective Equipment: ANSI APPRVD EYE WASH & DELUGE SHOWER (FP N). USE

DISPOSABLE/IMPERVIOUS CLTHG IF WORK CLTHG CONTAM IS LIKELY. (SUPDAT)

Work Hygienic Practices: WASH HANDS BEFORE EATING, SMKNG/USING WASHROOM.

FOOD/BEVERAGES SHOULD NOT BE CONSUMED ANYWHERE THIS PROD IS (SUPDAT) Supplemental Safety and Health: SPILL PROC: RUN-OFFS OUT OF MUNICIPAL SEWERS

& OPEN BODIES OF WATER. RESP PROT: AREAS. USE NIOSH APPRVD AIRLINE TYPE

RESP/HOOD IN CONFINED AREAS. VENT: ALL APPLIC AREAS SHOULD BE VENTILATED

I/A/W OSHA REG 29CFR PART 1910.94. OTHER PROT EQUIP: USE PROT CREAM TF

PRINGD SKIN CONT IS LIKELY. HYGIENE PRACT: BEING APPLIED.

Physical/Chemical Properties

B.P. Text: 212F,100C M.P/F.P Text: >32F,>0C Vapor Pres: 760 @ 100C Vapor Density: HVR/AIR Spec Gravity: 1.02 (FP N)

Evaporation Rate & Reference: SLOWER (BUTYL ACETATE =1)

Solubility in Water: COMPLETE

Appearance and Odor: LIQUID, SLIGHT ODOR.

Reactivity Data

Stability Indicator: YES

Stability Condition To Avoid: NONE SPECIFIED BY MANUFACTURER.

Materials To Avoid: AVOID CONTACT WITH: STRONG OXIDIZING AGENTS (E.G.

NITRIC

ACID, PERMANGANATES), ETC.

Hazardous Decomposition Products: SOME CARBON MONOXIDE.

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: NOT RELEVANT.

Toxicological Information

Ecological Information

MSDS Transport Information

Regulatory Information

Other Information

HAZCOM Label

Product ID: FIBERSET FT & FIBERSET PM, 7470

Cage: 0JYL9

Company Name: FIBERLOCK TECHNOLOGIES INC

Street: 630 PUTNAM AVE

PO Box: 390432

City: CAMBRIDGE MA Zipcode: 02139-0802

Health Emergency Phone: 617-876-8020;800-255-3924

Label Required IND: Y

Date Of Label Review: 11/25/1997

Status Code: C

Label Date: 11/25/1997
Origination Code: G
Eye Protection IND: YES
Skin Protection IND: YES
Signal Word: CAUTION

Respiratory Protection IND: YES

Health Hazard: Slight Contact Hazard: Slight

Fire Hazard: None

Reactivity Hazard: None

Hazard And Precautions: ACUTE: INHALATION: VAPORS OR SPRAY MISTS MAY BE SLIGHTLY IRRITATING TO EYES, NOSE, THROAT, AND MUCOUS MEMBRANE OF RESPIRATORY

TRACT, PRODUCING SYMPTOMS OF HEADACHE AND NAUSEA IN POORLY VENTILATED AREA S.

SKIN CONT: PROLONGED OR REPEATED CONTACT WITH COATING MAY CAUSE SLIGHT SKIN

IRRITATION. EYE CONT: DIRECT CONTACT; INCONSEQUENTIAL EYE IRRITATION. INGESTION: MAY CAUSE NAUSEA AND INTENDED EXPECTORAT ION. CHRONIC: NONE LISTED

BY MANUFACTURER.

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particular situation regardless of similarity to a corresponding Department

of Defense or other government situation.

ATTACHMENT C

DEMOLITION AREA CAP INFORMATION



NORTHWEST LININGS & GEOTEXTILE PRODUCTS, Inc.

21000 77th AVE. SOUTH KENT, WA 98032 253-872-0244 FAX 253-872-0245

E-Mail: nwlinings@att.net

Web Page: www.northwestlinings.com

REINFORCED POLYETHYLENE NWL WC-20

Product Name and Part #

NWL WC-20

Product Description:

NWL WC-20 is tightly woven from high density polyethylene to achieve exceptional tear resistance. It is then coated on both sides with a low density polyethylene. This construction allows the ribbons to shift and "bunch up" in response to any tearing force, therefore stopping the tear.

Product Use:

NWL WC-20 performs exceptionally well in outdoor applications because of the carbon black content in both the ribbon reinforcement and the black outer coating. The white side is protected with ultra violet inhibitors. NWL WC-20 offers the versatility of either a white side to reduce condensation and heat build up or the black side for even longer life.

Common Applications:

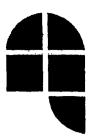
- Pit Liners
- Temporary Erosion Control
- Remediation Covers
- Railroad Car Covers
- Under Slab Vapor Barriers
- Remediation Liners
- ◆ Long Term Storage
- Ditch Linings
- ♦ Cargo Load Covers
- ♦ Decorative Ponds

Size Range:

600 square foot panels up to 40,000 square foot panels in a variety of widths and lengths.

Packaging:

NWL WC-20 is available in a wide range of sizes neatly accordion-folded and rolled on a heavy duty core. This allows for easier handling and time saving installation.



NORTHWEST LININGS & GEOTEXTILE PRODUCTS, Inc.

"Helping to Protect the Environment" 21000 77th Avenue South Kent, WA 98032 (253) 872-0244 • (800) 729-6954 FAX: (253) 872-0245 www.northwestlinings.com

Specifications NWL WC-20

Properties	Test Method	NWL WC-20 VALUES
Appearance		Black
Thickness	ASTM D5199	20 mil
Weight Per 1000 sq. ft.		10 oz. / Square Yard
Yarn Count		Nominal 16 x 16 Tapes/Inch
	<u> </u>	(1600 Denier Tape)
% Elongation		40
*Tensile Grab Strength	ASTM D5034	350 lbs.
*Tongue Tear	ASTM D2261	125 lbs
Hydrostatic Bursting Point	ASTM D751-89	240 PSI
UV Resistance	ASTM G 53	More than 80% retained after 2,000 hours
		exposure
Mullen Burst	ASTM D3786	630 PSI
Carbon Black Content	ASTM D1603	2% or greater
Carbon Dispersion	ASTM D3015	A-2 Range
Dimensional Stability	ASTM D1204	±3%
Maximum Use Temp. °F		180
Minimum Use Temp. °F		-70

^{*}Average Warp & Fill/Weft (F type)

Note: To the best of our knowledge, these are typical property values and are intended as guides only, not as a specification limits. NORTHWEST LININGS & GEOTEXTILE makes no warranties as to the fitness for a specific use or merchantability of products referred to, no guarantee of satisfactory results form reliance upon contained information or recommendations, and disclaims all liability for resulting loss or damage.



InterWrap Inc. 32923 Mission Way Mission, BC Canada V2V 6E4

Tel: Fax: 1 604 820 5400 1 604 820 5420

Toll Free: 1 800 567 9727

www.interwrap.com

October 24, 2006

Gloria Phair Western Industries, Inc. PO Box 428 Top of Yellowstone hill Miles City, MT. 59301

Subject: RhinoSkin™ - 20

Dear Gloria:

This letter is to confirm our discussions from earlier today regarding the expected longevity of our RhinoSkin™ - 20 product in outdoor applications.

RhinoSkin™ - 20 was designed to be stable in outdoor environments for an extended period of time. The UV chemistry used in production of this product will prevent the occurrence of premature degradation from exposure to the sun. The weave design and coating layers will provide tear and puncture resistance so that your cover made from RhinoSkin™ - 20 will handle extreme abuse from exposure to wind and other harsh weather conditions.

We warrant that RhinoSkin™-20 will maintain its physical properties, within 5%, for a period of three years in the outdoor applications that you have described, barring any abuse from machinery, sharp objects, tomado's, etc.

Best regards,

John

John Coyne
Division Manager, Industrial Fabrics Division



Maple Textile, LLC 856 S. Pleasantburg Dr. Greenville, SC 29607 (864)242-1293 www.mapletextile.com

Geotextile Product Description Sheet

Style TNS R100

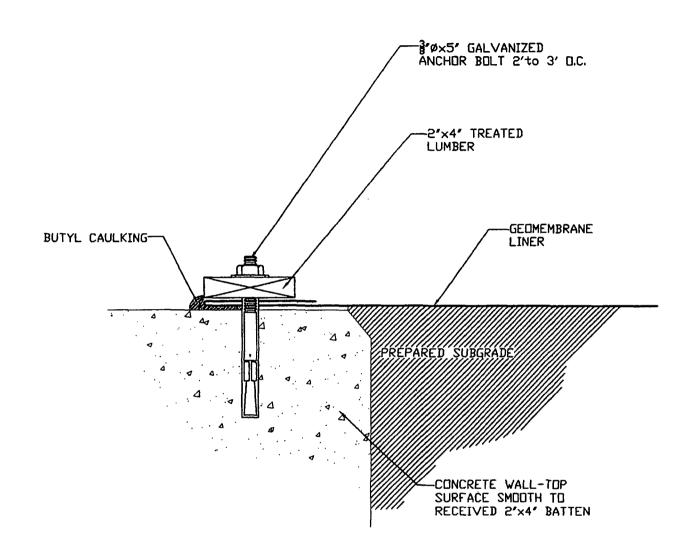
TNS R100 is a nonwoven geotextile produced by needlepunching 100% polypropylene staple fibers in a random network to form a high strength dimensionally stable fabric. The polypropylene fibers are specially formulated to resist ultraviolet light deterioration, and are inert to commonly encountered soil chemicals. The fabric will not rot or mildew, is non-biodegradable, and is resistant to damage from insects and rodents. Polypropylene is stable within a ph range of 2 to 13. TNS R100 conforms to the physical property values listed below:

Fabric Property	Test Method	Units	Minimum Average Roll Value
Grab Tensile	ASTM D 4632	lbs.	250 (1.11 kN)
Grab Elongation	ASTM D 4632	%	50
Trap Tear	ASTM D 4533	lbs.	100 (.444 kN)
Puncture	ASTM D 4833	Lbs	150 (.667 kN)
Mullen Burst	ASTM D 3786**	Psi	500 (3445 kPa)
Permitivity*	ASTM D 4491	1/sec	1.2
Water Flow*	ASTM D 4491	gpm/sqft	80 (3251 l/min/sm)
AOS	ASTM D 4751	U.S. Sieve	100 (.150 mm)
UV Resistance	ASTM D 4355	% Strength	70
after 500 hrs.		Retained	
<u></u>	Pa	ckaging	
Roll Dimensions-Fed	12.5 x 360/15 x 300		
Square Yards Per R	500		
Estimated Roll Weig	320		

^{*} At time of manufacturing, handling may change these properties.

^{**} Modified

To the best of our knowledge, the information contained herein is accurate. However, TNS Advanced Technologies cannot anticipate all conditions under which TNS product information and our products, or the products of other manufacturers in combination with our products, may be used. We accept no responsibility for results obtained by the application of this information or the safety or suitability of our products either alone or in combination with other products. Final determination of the suitability of any information or material for the use contemplated, of its manner of use, and whether the suggested use infringes any patents is the sole responsibility of the user.



NOTE:

NOT TO BE USED UNDER WATER.

LINER TO CONCRETE ATTACHMENT WOODEN BAR TYPE SINGLE LINER SYSTEM NTS

Northwest Linings & Geotextile Products, Inc.(NWL) is not a licensed engineering firm and does not practice engineering or provide engineering services. NWL does not make any representation or warranties, express or implied, as to any drawings, or the suitability of any of the drawings for a particular use or purpose. Without limiting the foregoing, NWL makes no representation or warranty that the drawings are appropriate for any particular installation. Only a registered professional engineer who has specialized knowledge of a particular project and the needs and requirements of such project can determine what specific design, engineering or installation detail is best suited for each project.

SHEET NO.	DETAIL

NORTHWEST LININGS & GEOTEXTILE PRODUCTS, Inc.

www.northwestlinings.com 21000 77TH AVE. SOUTH KENT, WA. 98032 (253) 872-0244 (253) 872-0245 FAX

JOB NAME:					
JOB NO.					
DATE:	6	15	06	CHECKED:	KL
BY:		SGG		SCALE:	

ATTACHMENT D

CAMU LINER AND QUALITY CONTROL MANUALS



NORTHWEST LININGS & GEOTEXTILE PRODUCTS, INC CONSTRUCTION QUALITY CONTROL MANUAL FOR NONWOVEN GEOTEXTILES FIELD INSTALLATIONS

I. Geotextile Unloading & Storage:

- A. The geotextile shall be labeled, stored, and handled in accordance with ASTM D 4873, "Guide for Identification, Storage and Handling of Geotextiles".
- B. Geotextile rolls are to be unloaded under supervision of the geotextile installer or experienced contractor using straps or other devices that will prevent damage to the geotextile material.
- C. The geotextile shall be kept dry and wrapped in a waterproof wrapping so that it is protected from UV light and the elements during shipping and storage. Torn wrapping shall be repaired as quickly as possible using an approved protective covering.
- D. Rolls should be stored on supports that will not damage the material. The material must be elevated at least 2 inches above the sub grade.
- E. If any material is found to be damaged during unloading, a notation should be made as to the roll number, location of damage and type. This information should be given to the Project Manager.

II. Material Deployment

- A. No material is to be deployed until the Project Inspector has inspected and approved installation of the geotextile.
- B. Material will not be deployed when moisture, high winds, or other adverse weather conditions are expected. This determination will be made by the Field Installation Superintendent (FIS).
- C. Geotextile materials are to be deployed using methods that will not damage the material. The material will be visually inspected during deployment and any faulty or unsatisfactory areas will be marked for corrective action.
- D. If necessary, temporary sand bags may to be used to prevent material uplift and movement from winds during geotextile installation. The number and location of sand bags will be determined by the FIS.
- E. All folds and excessive wrinkles are to be removed prior to sewing adjacent panels together.
- F. On slopes, the geotextile shall be anchored at the top and unrolled down the slope or deployed by spooling off a suspended roll at the top of the slope.

III. Material Seaming

A. Field seams are to be made by using sewing machines and thread specifically adapted for this purpose or other methods noted in section V.

- B. Adjacent panels are to be overlapped a minimum of three inches and sewn together. A sewing crew is to consist of a sewing machine operator and at least one assistant to help align the materials. The machine operator and assistant are to inspect opposite sides of the seam for dropped or incorrect stitches.
- C. Seams shall be sewn utilizing one row of stitching. A row shall consist of 4 to 7 stitches per inch.
- D. Damaged areas of geotextile are to be patched with an additional layer of geotextile material. The patch is to overlap the damaged area by a minimum of six inches on each side and is to be heat bonded to the main layer of geotextile.
- E. Thread should be of contrasting color to the fabric to facilitate seam inspection.
- F. The installer shall ensure that no soil materials are present within seams or overlaps.

IV. Project Documentation

- A. The FIS will maintain the following documentation on a daily basis:
 - 1. Log of job activities, including number of personnel, weather conditions, and quantity of geotextile deployed.
 - 2. Listing of material placed, including a list of roll numbers used.

V. Seams

SEWN SEAMS

Three seams that will provide optimum strength for geotextile sewing are the Flat (Prayer) seam, the "J" seam, and the Butterfly-foided seam.

When sewing a flat seam, the stitching should be approximately 1.5 inches from the outside edge of the fabric (not in the selvage or at the selvage edge). The "J" fold and Butterfly fold seams require a fold of 1.25 inches to 2 inches from the fabric edge with the stitching approximately 1 inch from the folded edge.

Care should be taken with either seam to assure that the two fabric edges are near even during seaming

HEAT SEAMING

On geotextiles seven (7) ounces per yard or heavier, fusion seaming with a fusion wedge welder may be used. The minimum overlap for this type of welding is four (4) inches. Prior to fusion seaming the geotextile together, the installer must demonstrate to the Field Engineer the ability to perform this type of installation. Areas burned through by fusion welding shall be properly repaired. Care should be taken during

installation to prevent damage to the geotextile. Torn or punctured material shall be patched with sufficient overlap to prevent separation.

HEAT BONDING/TACKING

On geotextiles six (6) ounces per yard or heavier a hand held hot air welder or torch can be used to bond the nonwoven geotextile together continuously or spot bonded. The overlap should be 6 inches. Areas burned through by fusion welding shall be properly repaired. Care should be taken during installation to prevent damage to the geotextile. Tom or punctured material shall be patched with sufficient overlap to prevent separation.

OVERLAP

Some applications will only require an overlapped seam. Typical overlap is six (6) inches, this can vary depending on specific projects or applications.



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NORTHWEST LININGS & GEOTEXTILES PRODUCTS, INC. CONSTRUCTION QUALITY CONTROL MANUAL FOR GEONET/GEOCOMPOSITE DRAINAGE LAYER FIELD INSTALLATIONS

Geonet/Geocomposite Installation:

The geonets shall comply with manufacturer's specification.

A. Handling and Placement:

The geonets shall be handled in such a manner as to ensure the nets are not damaged in any way.

- On slopes, the geonets shall be secured in the anchor trench and then rolled down the slope in such a manner as to continually tension the sheet. If necessary, the net shall be positioned by hand after being unrolled to minimize wrinkles. Geonets can be placed in the horizontal direction in some special locations (e.g., at the toe of a slope, or where an extra layer of net is required).
- 2. Geonets can also be deployed from a spreader bar and unrolled be either securing the end of the geonet and backing up the equipment to unroll the material or the equipment can remain stationary and the material can be unrolled by laborers grabbing the end of the roll and unrolling it off of the spreader bar. (This method is normally only used when the geonet is being deployed over Geomembrane)
- Geonets shall not be welded to geomembranes as the expansion and contraction rates for the two materials are different.
- Geonets shall be cut using approved cutters, i.e., hookblade razor knife, scissors, etc. Care should be taken to prevent damage to underlying layers of geomembrane.
- Care must be taken not to entrap dirt in the net that could cause clogging of the system, and/or stones that could damage the adjacent geomembrane.
- 6. Care should be taken not to leave tools in or under the geonet.

B. Tying of Geonet:

Adjacent geonets shall be joined according to the following requirements.

- Adjacent rolls shall be overlapped by at least four inches and securely tied at a minimum of 5' foot on center on the sides and a minimum of 6" inches on center at the butt seam where one roll ends and another begins.
- Tying can be achieved by plastic fasteners, commonly known as wire ties or zip ties. Tying devices shall be white or yellow for easy inspection. Metallic devices are not allowed.
- In the corners of the side slopes where overlaps between perpendicular geonet strips are required. An extra layer of geonet, 1 roll width wide shall be placed parallel to the confluence of the slopes from the anchor trench to the bottom of the slope.
- 4. With Geocomposite nets it may also be required to carefully overlap the upper layer of non-woven fabric from adjacent panels.

C. Layering of Geonet:

When several layers of net are installed, care should be taken to prevent the strands of one layer from penetrating the channels of the next layer, thereby significantly reducing transmissivity. Layered nets must be placed in the same direction and never laid perpendicular to the underlying geonet. Overlaps must be staggered and layers tied together.

D. Repair:

- Any holes or tears in the geonet shall be repaired by placing a patch extending two feet beyond the edges of the hole or tear. The patch shall be secured to the original geonet by tying every six inches. If the hole or tear is more than 50% of the width of the roll, the damaged area shall be cut out and the two remaining portions of the geonet shall be joined.
- Repairs to a composite geonet will require that in addition to the net being replaced, a layer of non-woven geotextile at least equal to that which is bonded to the geonet be placed over and extend at least 6" beyond the repair and tack welded in place with a leister.

E. Seaming of fabrics on Geocomposite:

- After tying the underlying geonet, only the upper layer of fabric can be attached to the
 adjoining fabric. The fabric's should be overlapped, laid flat and held in place by one of
 the following methods so that the fabric will remain in place during backfilling or
 placement of overlying Geosynthetic materials.
 - A. Minimum 40 Lb. Sandbags spaced no more than 10' OC
 - B. Heat bonded (continuous or tack-welded every 5') together by means of a hand held or motorized hot air welder.
 - Sewn with a single or double stitch prayer seam by means of a hand held sewing machine (For slope applications)
 - D. Fusion wedge welded for fabrics 6 oz./sy and heavier.



NORTHWEST LININGS & GEOTEXTILES PRODUCTS, INC. CONSTRUCTION QUALITY CONTROL MANUAL FOR HDPE AND LLDPE CONTAINMENT MEMBRANE FIELD INSTALLATIONS

NORTHWEST LININGS AND GEOTEXTILES HDPE/LLDPE-FIELD QUALITY CONTROL MANUAL

I. INTRODUCTION

- A. This manual describes the Quality Control Procedures utilized by Northwest Linings (NWL) Installation Personnel to assure quality workmanship and installation integrity of HDPE/LLDPE Geomembranes.
- B. Geosynthetic components of lining systems which are addressed in this manual are HDPE/LLDPE Geomembranes. NWL recognizes that specific documentation of the specific installation is required to substantiate this Quality Control Program.

II. HDPE/LLDPE GEOMEMBRANE INSTALLATION

A. Earth Work

- The general and/or earthwork contractor shall be responsible for preparing and maintaining the subgrade in a condition suitable for liner installation unless agreed otherwise.
- 2. Surfaces to be lined shall be smooth and free of debris, roots, and angular or sharp rocks to a depth of four (4) inches. All fill shall consist of well-graded material free of organics, trash, clayballs or other harmful matter. No sharp edged stones, stones larger than one (1) inch diameter or hard objects shall be allowed within the top four (4) inches of the subgrade. The surface shall be compacted in accordance with project specifications but in no event below the minimum required to provide a firm unyielding foundation sufficient to permit the movement of vehicles and welding equipment over the surface without causing rutting or other harmful effects. The subgrade shall have no sudden sharp or abrupt changes in grade.
- 3. The earthwork contractor shall protect the subgrade from becoming too dry, flooding and freezing. Protection, if required, may consist of a thin plastic protective cover (or other material as approved by the engineer) installed over the subgrade until the placement of the liner begins. Subgrade found to have cracks greater than 1/2 inch in width or depth or which exhibit swelling, heaving or other similar conditions shall be reworked by the general contractor to remove these defects.
- 4. Surface acceptance: Upon request, NWL will provide the Owner's Representative with a written acceptance of the surface to be lined. This acceptance will be limited to an amount of area that NWL is capable of lining in a particular work shift. Subsequent repairs to the subgrade and the surface shall remain the responsibility of the earthwork contractor.

B. Crest Anchorage System

- The anchor trench shall be excavated by the earthwork contractor to lines and widths shown on the design drawings prior to geomembrane placement.
- Anchor trenches excavated in clay soils susceptible to desiccation cracks should be excavated only the distance required for that days liner placement to minimize the potential for cracking of the clay soils.
- 3. Corners in the anchor trench shall be slightly rounded where the geomembrane enters the trench to minimize sharp bends in the liner.

C. Preparation for Geomembrane Deployment

- Panel Layout Prior to liner deployment, layout drawings shall be produced to indicate the panel configuration and location of seams.
- 2. Identification: Each panel used shall be given a numeric or alpha-numeric identifier consistent with the layout drawing. This identification number shall be related to a manufacturing roll number.

D. Field Panel Placement

- Location: NWL will attempt to install field panels at the location indicated on the layout drawing. If
 panels are positioned in a location other than that indicated on the layout drawings, the revised
 location shall be noted in the field on a layout drawing which will be modified at the completion of the
 project to reflect actual panel locations.
- Weather Conditions: Geomembrane deployment shall not be done during any precipitation, in the presence of excessive moisture (i.e. fog, dew), in an area of standing or ponded water, or during high winds.

3. Method of Deployment:

- The method and equipment used to deploy the panels must not damage the geomembrane or the supporting subgrade surface.
- No personnel working on the liner will smoke, wear shoes that can damage the geomembrane, or engage in actions which could result in damage to the geomembrane.
- Adequate temporary ballast and/or anchoring, (i.e. sandbags,) which will not damage the geomembrane, will be placed to prevent uplift of the liner by wind.
- 4. The geomembrane will be deployed in a manner to minimize wrinkles.
- 5. Any damage to a panel of geomembrane will be repaired in accordance with Section IV. Any area of a panel seriously damaged (torn, twisted, or crimped) will be marked, cut out, and removed from the work area with resulting seaming and/or repairs performed in accordance with Section IV of this document.

E. Field Seaming

1. General Requirements:

- Layout: In general, seams shall be oriented parallel to the slope, (down hill) not across the slope. Whenever possible, horizontal seams should be located not less than five (5) feet from the toe of the slope. Each seam shall be numbered in a manner compatible with the panel layout drawing for documentation of seam testing results.
- Personnel: All personnel performing seaming operations shall be trained in the operation of the equipment being used and will qualify by successfully welding a test seam as described herein. The project foreman will provide direct supervision of all personnel seaming to verify proper welding procedures are followed.

F. Equipment:

- 1. Fusion Welding: Fusion Welding consists of placing a heated wedge, mounted on a self propelled vehicular unit, between two (2) overlapped sheets such that both sheets are heated to temperatures ranging from 600 degrees F. to 950 degrees F. After being heated by the wedge, the overlapped edges pass through a set of preset pressure rollers which compress the panels together forming a continuous homogenous fusion weld. The fusion welder is equipped with a temperature readout device which continuously monitors the temperature of the wedge.
- 2. Extrusion Fillet Welding: Extrusion welding consists of introducing a ribbon of molten resin along the edge of the seam overlap to the two sheets to be welded. The molten polymer causes some of the material of each sheet to be liquefied resulting in a homogeneous bond between the molten weld bead and the surfaces of the sheets. The extrusion welder is equipped with gauges giving the temperature in the apparatus and the preheat temperature at the nozzle.

G. Seam Preparation:

1. Fusion Welding:

- 1. Overlap the panels approximately four (4) inches.
- Clean the seam area prior to seaming to assure the area is clean and free of moisture, dust, dirt and debris.
- 3. No grinding is required for fusion welding.
- Adjust the panels so that seams are aligned with the fewest possible number of wrinkles and "fishmouths".

2. Extrusion Welding:

- 1. Overlap the panels a minimum of three (3) inches.
- 2. Temporarily bond the panels to be welded taking care not to damage the geomembrane.
- Grind seam overlap prior to welding within 15 minutes of welding operation in manner that does not damage the geomembrane.
- Clean the seam area prior to seaming to assure the area is clean and free of moisture, dust dirt and debris of any kind.
- Purge the extruder prior to beginning the seam to remove all heat-degraded Extrudate from the barrel.
- 6. Keep welding rod clean and off the ground.

H. Test Seams:

Test seams shall be performed at the beginning of each seaming period and at least once each five hours for each seaming apparatus used that day. Test seams shall be made on fragment pieces of the liner and under the same conditions as actual seams.

Test Seam Length:

The test seam shall be at least three feet long, made by joining 2 pieces at least 9" in width.

2. Sample Procedures:

- 1. Visually inspect the seam for squeeze out, footprint, pressure and general appearance.
- Two samples one inch wide shall be cut from the test seam. The samples shall then be tested in peel and shall not fail in the seam. Failure shall be a film tear bond (FTB). If a sample fails, the entire procedure shall be repeated.
- 3. If any of the second set of samples fail, the machine shall not be accepted and used for seaming until the problem is corrected and 2 passing tests are achieved.
- 4. After completion of the test the remaining portion of the test seam shall be discarded. Documentation of the test seams will be maintained by listing machine I.D. number, operators name, temperature control setting and test results.
- 5. Passing test results records shall be maintained on NWL's test weld report form.
- If test samples are to act as destructive samples then the sample shall be marked, logged and saved. If samples are to be cut from the actual finished seam for Lab Testing, the test seams shall be discarded per above.

I. General Seaming Procedures:

- 1. Seaming shall extend to the outside edge of panels to be placed in the anchor trench.
- While welding a seam, monitor and maintain the proper overlap.
- Inspect seam area to assure area is clean and free of moisture, dust, dirt and debris of any kind.
- 4. While welding a seam, monitor temperature gauges to assure proper settings are maintained and that the machine is operating properly.
- 5. Align wrinkles at the seam overlap to allow welding through a wrinkle.
- 6. Fishmouths or wrinkles at seam overlaps that cannot be welded through shall be cut along the ridge in order to achieve a flat overlap. The cut area shall be seamed. Any portion where the overlap is inadequate shall be patched with an oval or round patch extending six inches beyond the cut in all directions.
- All cross/butt seams between two rows of seamed panels shall be welded during the coolest time of the day to allow for contraction of the geomembrane.
- All "T" joints shall have the overlap from the wedge welder seam trimmed back to allow an extrusion fillet weld. Then grind two inches on either side of the seam and extrusion weld all of the area prepared by grinding.

J. Weather Conditions:

NWL relies on the experience of the Project Superintendent and the results of test seams to determine seaming restriction by weather. Many factors, such as ambient temperature, humidity, wind, sunshine, etc., can effect the integrity of field seams and must be taken into account when deciding whether or not seaming should proceed. Test seams are required prior to daily production seaming to determine if the weather conditions will effect NWL's ability to produce quality seams. Additional non-destructive and destructive testing of production seams substantiate the decision made by the Project Superintendent to seam on any given day.

SECTION III Seam Testing-Quality & Control-Geomembranes

A. Concept:

NWL installation crews will non-destructively test all field seams over their full length using air pressure testing, vacuum testing or other approved method, to verify the continuity and integrity of the seams.

B. Air Pressure Testing:

The weld seam created by the fusion welding process is composed of two welded seams separated by an unwelded channel approximately 3/8 of an inch wide. This channel permits seams to be tested by inflating the sealed channel with air to a predetermined pressure and observing the stability of the pressurized channel over time.

C. Equipment for air testing:

- An air pump (manual or motor driven) capable of generating and sustaining a pressure of 30 PSI.
- A rubber hose with fittings and connections.
- A sharp hollow needle with a pressure gauge capable of reading and sustaining a pressure of 30 PSI.
- Procedure for air testing:

- 5. Seal both ends of the seam to be tested.
- 6. Insert needle in the sealed channel.
- Inflate the test channel to a pressure between 25 to 30 PSI, in accordance with the following schedule, close valve, and allow 2 minutes for the injected air to come into equilibrium in the channel. Observe initial pressure after approximately 2 minutes.

INITIAL PRESSURE SCHEDULE*

MAX. PRESSURE DIFF.

MATERIAL	(MIL)	MIN. PSI	MAX. PSI	AFTER 5 MINUTES
	40	25	30	4
	50	26	30	4
	60	27	30	4
	80	30	30	4
	100	30	30	4

^{*} Initial pressure settings are read after a two minute relaxing period. The purpose of this period is to permit the air temperature and pressure to stabilize.

- 8. Observe and record the air pressure five minutes after the relaxing period ends. If loss of pressure exceeds the value above or if the pressure does not stabilize, locate the faulty area and repair.
- Upon completion of the pressure test the end of the seam opposite the pressure gauge is cut. A
 decrease in gauge pressure must be observed or the air channel will be considered blocked and the
 test will be repeated after the blockage is corrected.
- 10. Remove needle and seal resulting hole by extrusion welding.
- 11. Record test results on non-destructive test form
- In the event of a Non-Complying Air pressure test, the following procedure shall be followed.
- 13 Check seam-end seals and retest seams.
- 14. If non-compliance reoccurs, cut one inch samples from each end of the seam and additional samples at the distance specified.
- 15. Perform destructive field peel test on the samples.
- 16. If all samples pass destructive testing remove the overlap left by the wedge welder and perform an Air Pressure/Soap Test or vacuum test.
- 17. If a leak is detected by the air pressure/soap or the vacuum test, repair by extrusion welding. Test repair by vacuum testing.
- 18. If no leak is discovered air pressure/soap testing, the seam will pass non-destructive testing.
- 19. If no leak is discovered by vacuum testing, the seam will pass non-destructive testing.
- 20. If one or more samples fail the peel test, additional samples will be taken.
- 21. When two passing samples are located, the seam between these two locations will be considered complying. The area outside of this length will be considered non-complying and the entire length extrusion welded.
- 22. Test the entire length of the repaired seam by vacuum testing.

D. Air Pressure Testing/Soap Testing:

This test is used when the seam fails the air pressure test due to slow pressure loss. The procedure is to constantly supply pressure to the seam air channel while spraying the length with a soap and water solution and visually examining the seam for bubbles. Note: This option is not recommended during high wind conditions.

- 1. Equipment for Air Pressure/Soap Testing:
 - 1. The same equipment as the air pressure test.
 - 2. A soap solution and means to apply the solution.
- 2. Procedure for Air Pressure/Soap Testing:
 - 1. Trim excess overlap material off at edge of seam
 - Insert needle gauge assembly in opposite ends of the seam to be tested to show that pressure is continuous throughout the channel.
 - 3. Maintain 30 psi
 - 4. Apply soap solution to the weld edge and visually examine for bubbles.
 - If no bubbles appear the problem is with the inside track "secondary weld". This seam is acceptable providing it has passed peel tests.
 - 6. If any bubbles appear on the outside track "Primary weld", repair defect by extrusion welding and vacuum test the repair.

E. Vacuum Testing:

This test is used when the geometry of the weld makes air pressure testing impossible or impractical or when attempting to locate the precise location of a defect believed to exist after air pressure testing.

- 1. Equipment for vacuum testing:
 - Vacuum box consisting of a rigid housing, a transparent viewing window, a soft neoprene gasket attached to the bottom, port hole or valve assembly and a vacuum gauge.
 - Vacuum pump assembly or compressor with a venturi equipped with a pressure controller and pipe connections.
 - A rubber pressure/vacuum hose with fittings and connections.
 - 4. A soap solution with a means to apply the solution.
- 2. Procedure for Vacuum Testing:
 - 1. Trim excess overlap from seam.
 - 2. Apply soap solution to the area to be tested.
 - Place the vacuum box over the area and apply sufficient downward pressure to seal the box against the liner.
 - 4. Open the vacuum valve and apply a minimum of 5 in. Hg vacuum to the area as indicated by the gauge on the box.
 - 5. Ensure that a leak-tight seal is created.

- For a period of not less than five seconds, examine the geomembrane through the viewing window for the presence of soap bubbles.
- 7. If no bubbles appear after five to ten seconds, close the valve and move overlap and repeat the process.
- 3. Procedure for non-complying test:
 - 1. Mark all areas where soap bubbles appear and repair the marked areas.
 - 2. Retest repaired areas.

F. Destructive Testing:

The purpose of destructive testing is to determine and evaluate seam strength. These tests require direct sampling and thus subsequent patching, therefore destructive testing should be held to a minimum to reduce the amount of repairs required.

- 1. Procedure for Destructive Testing:
 - 1.1. Destructive test samples shall be marked and cut out randomly at a minimum average frequency of one test location every 700 feet of seam length.
 - 1.2. Additional test may be taken in areas of contamination, offset welds, visible crystallinity or other potential cause of faulty welds.
- 1) Sample Size:
 - a) The sample should be twelve inches wide with a seam fourteen inches long centered lengthwise in the sample. The sample may be increased in size to accommodate independent lab testing by the owner or by specific project specifications.
 - b) A one inch sample shall be cut from each end of the test seam for field testing on a calibrated field tensiometer.
- 2) The one inch wide samples shall be tested in the field for peel. If any field sample fails to pass FTB, it will be assumed the sample fails destructive testing. The procedures outlined in Section 2 shall be followed to locate passing samples to send to the laboratory.
 - i) If the sample passes the field test, the remaining portion of the sample test strip shall be sent to Northwest Linings for laboratory testing to evaluate seam strength and confirm field testing.
- 1. Procedure in the event of Destructive Test Failure:
 - 1. Cut additional field samples for testing. In the case of a field production seam, the samples must lay a minimum of ten feet in each direction from the location of the failed sample. Perform a field test with the tensiometer for peel strength, and confirm field testing.
 - If the laboratory samples pass, then reconstruct the seam up to the two passing sample locations.
 - Heat tack the overlap along the length of the seam to be reconstructed and extrusion weld.
 - Vacuum test the extrusion weld.

- 3. If either of the samples fails then additional samples are taken in accordance with the above procedure until two passing samples are found to establish the zone in which the seam should be reconstructed.
- 4. All passing seams must be bounded by two locations from which samples passing destructive test have been taken.
- 5. In the case of reconstructed seams exceeding 150 feet, a sample must be taken and pass destructive testing.
- 6. All destructive seam samples sent to Northwest Linings shall be numbered and recorded on a destructive seam test form.
- 3. Northwest Linings Quality Assurance Laboratory Testing:

The remaining destructive sample will be sent to a qualified laboratory and will be tested in "Seam Strength" and "Peel Adhesion" (ASTM D 3083 and ASTM D413) as modified in NSF Standard No. 54. Five specimens shall be tested for each test method with data recorded. Four out of the five specimens must pass for each test in order for the seam to pass the destructive test.

SECTION IV Defects and Repairs

A. Inspection

- 1. Northwest Linings Project Superintendent shall conduct a detailed walk through and visually check all seams and non-seam areas of the geomembrane for defects, holes, blisters and signs of damage during installation.
- 2. All other NWL installation personnel shall at all times, be on the lookout for any damaged areas. Damaged areas shall be marked and repaired.

B. Procedure

- 1. Repair procedures: Any portion of the geomembrane showing a flaw, or failing destructive or non-destructive test shall be repaired. Several methods exist for repairs, and the decision as to the appropriate method shall be made by NWL's Project Superintendent. Methods available for repair.
 - 1. Patching used to repair large holes, tears and destructive sample locations. All patches shall extend at least six inches beyond the defect and all corners of patches shall be rounded.
 - 2. Grinding and welding used to repair sections of extruded seams.
 - 3. Spot welding or seaming used to repair small tears, pinholes or other minor localized flaws.
 - 4. Capping used to repair lengths of failed extruded areas.
 - 5. Removal of a bad seam and replacement with a strip of new material seamed into place.

C. Verification of Repairs:

1. Every repair shall be non-destructively tested using the methods set out in this manual Repairs which pass the non-destructive test shall be deemed adequate. Large repairs may require a destructive test. Repair test results shall be logged on a repair report form. The repair location shall be recorded on a record drawing.